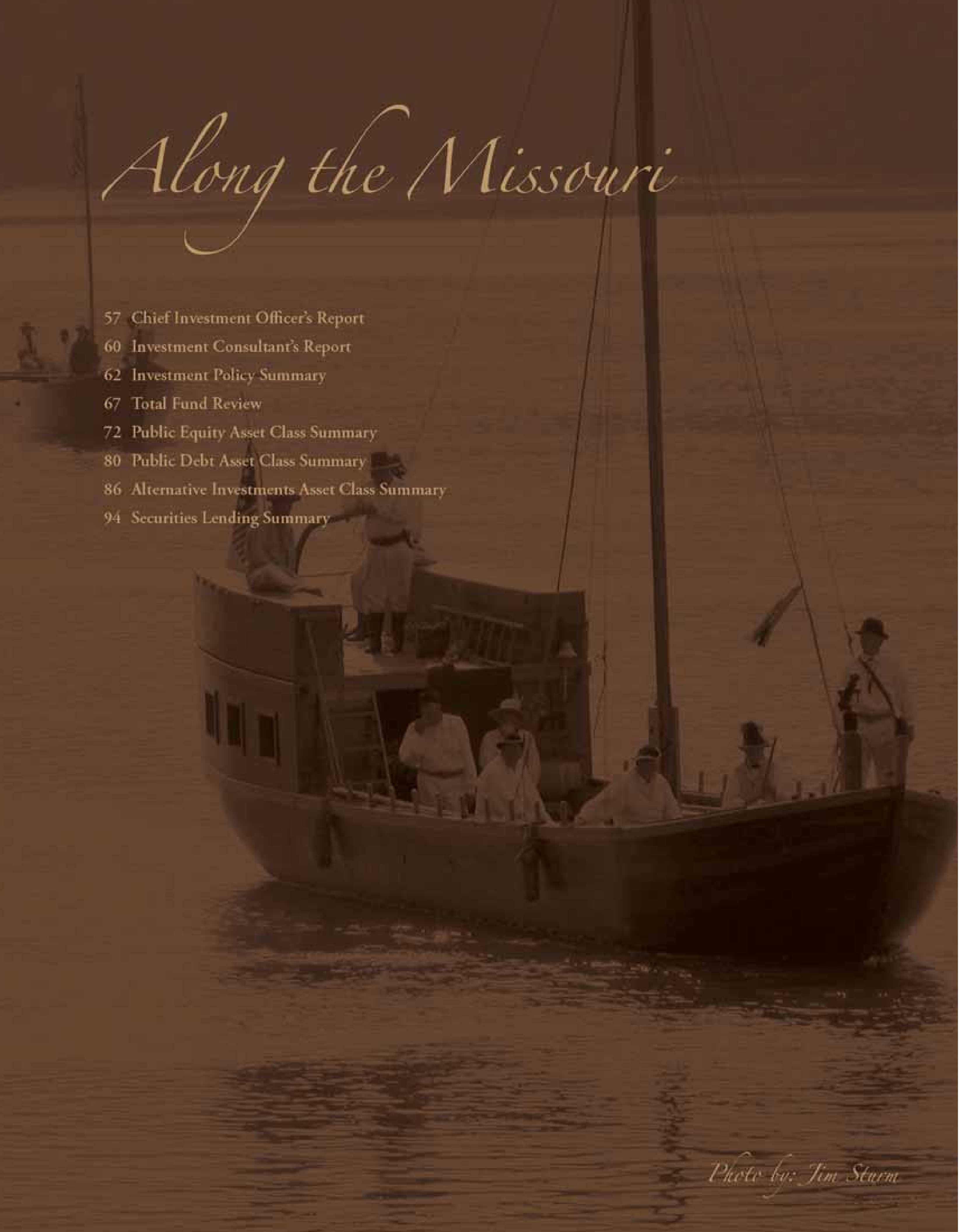


Along the Missouri

Photo by: Jim Sturm

Chief Investment Officer's Report

MOSERS®

October 1, 2004

Dear Members:

It is a privilege to present this year's Investment Section of the *MOSERS' Comprehensive Annual Financial Report*. As we pay tribute to Lewis and Clark and commemorate their epic journey, I pause for a moment to reflect upon MOSERS' investment journey and our experiences (both during the past year and beyond) from which we have grown. We may not face the same challenges as Lewis and Clark, but there are parallels which can be drawn between our respective journeys. I can attest to the fact that the "waters" we've been charting in this most recent decade have been like dangerous rapids compared to the relative calm that prevailed for the better part of the previous two decades. These changes in the market have led to many challenges and new discoveries over the past few years - many which have been of benefit to MOSERS' financial security. I am delighted to share the following journal entries related to the performance of your fund:

- As of June 30, 2004, MOSERS was one of the 200 largest defined benefit plans in the U.S. with total assets just under $6 billion.
- The fund returned 17.1% net of expenses for the fiscal year. This return compares favorably to the 16.7% return of our policy benchmark. In dollar terms, this excess performance translates into an additional $23 million in profit for the system.
- Over the three years ended June 30, 2004, MOSERS' portfolio returned 5.5% annualized. This return compares favorably to the 4.1% return of our policy benchmark. In dollar terms, this excess performance translates into well over $250 million for the fund that would not have been earned had the assets been invested passively.
- Over the 10-year time frame, MOSERS' performance of 10.2% on an annualized basis has well exceeded the required annual return of 6.8% necessary to fund the liabilities during this same period.
- When performance is compared to other public pension funds across the country, MOSERS' performance is consistently in the top 20% across all measured time periods. There are but a handful of other public pension funds that are in a position to claim such a similar consistency of results.

As I embark upon my 10th year as chief investment officer, I am reminded of the quote "Success is a journey, not a destination." Clearly my journey at the helm of the investment program has been memorable, and I have witnessed numerous changes within the investment arena which have impacted MOSERS' investment program. From the building of an internal team of investment professionals to the incorporation of new investment strategies into the portfolio, each change has made its mark on our program and moved us further along the journey we continue today. However, what continues to remain year after year here at MOSERS is our underlying mission – ***"To preserve the long-term corpus of the fund, to maximize total return within prudent risk parameters, and most importantly, to act in the exclusive interest of each of you, the members of the system."***

Looking back to Lewis' and Clark's historic journey, I can sympathize with what they might have felt when they were charged to find and map a transcontinental water route to the Pacific Ocean. When President Thomas Jefferson gave the Corps of Discovery their marching orders in 1804, little did they know what they might discover and whether their adventure would be deemed a success. With $2,500 in hand, they set out uncertain of what the next mile of their journey would bring. Investing is a lot like this historic journey – we are charting a course, but never know what the future will hold from the investment markets. Thus, we must prepare for a variety of outcomes in order to meet the system's financial needs. How do we accomplish this undertaking? Clearly, there are a few tools MOSERS utilizes that help to chart our course – most importantly, a well-defined governance policy along with a strong set of investment beliefs. I have spent these pages in past letters discussing those beliefs and their importance. While I will not go through them again now, they are detailed in the Investment Policy Summary found on page 62 if you would like to review them further.

MOSERS utilizes several measurement tools which help us to stay on course, particularly in rough water - a key tenet of a sound governance model. The prominent role of performance measurement in our investment process requires us to continually ask ourselves challenging questions, in particular, "How should we measure our investment performance to ensure that our governance model is working and our investment program is being implemented effectively on behalf of the system stakeholders?" On the surface, measuring investment success may seem like an easy undertaking, but in reality it can be quite complex. MOSERS has spent a great deal of time examining this question throughout the past year.

Keith Ambachtsheer, a well-known pension consultant, summed up the investment measurement issue best when he stated, "***What gets measured, gets managed.***" While there are numerous factors to consider in establishing measurement criteria, the primary consideration should be the realization that how performance is evaluated often drives the behavior of various parties engaged in the investment decision-making process. It is this element of the process that makes the selection of appropriate measurement tools critical to ensuring that decisions being made are aligned with the objectives of the system.

Recognizing the critical role of performance measurement, MOSERS' utilizes several tools in the oversight process. The primary tools for gauging MOSERS' investment success include i)comparing our longer-term results to the required rate of return objective (RRO) used in establishing the contribution rates; ii) comparing performance over all periods to a series of commonly used investment market benchmarks; and iii) comparing performance to a group of our peers. While some of these tools are more appropriate than others in particular situations, each plays a distinctive role in assessing MOSERS' investment success.

RRO is a natural choice given the ultimate goal is to fund the liabilities. Over the long-term, the returns must meet the RRO in order to maintain affordable contribution rates, barring dramatic changes to the plan's structure and/or demographic experience. In keeping with the board's primary objective to "preserve the long-term corpus of the fund," the comparison of fund returns to the RRO plays a key role in measuring the accomplishment of this objective. Comparison information on MOSERS' return relative to the RRO may be found on page 67.

Another common means of measuring performance is the use of standard market benchmarks. These benchmarks are paper portfolios of securities constructed for comparison with our actual results to determine if the real portfolios are being managed effectively. This tool is the most commonly used within the investment arena. As a result, thousands of benchmarks have emerged representing almost every conceivable asset class. While this demonstrates the importance that has been placed on quantifying investment results, it also makes identifying the appropriate benchmark for relative measurement a difficult undertaking. The use of market benchmarks is of critical importance on several levels within MOSERS' investment management process. Primarily, the board relies upon these benchmarks in their oversight capacity to ensure that I and the external asset consultant are effectively making good portfolio management decisions. The use of these benchmarks not only provides them with feedback about our performance, but also serves as a prudent risk control mechanism which prevents us from taking actions that would run counter to system goals. That being said, the selection of the appropriate benchmark is critical to ensure that the benchmark we are modeling the portfolio around is reflective of the desired outcome. A comparison of MOSERS' returns to the board's defined market benchmarks may be found on page 68.

The final benchmarking tool MOSERS relies upon is to compare our performance to other similarly situated funds. We call a group of these funds a peer universe. This performance measurement tool is the least important in terms of funding our liabilities, however, it is difficult to completely ignore what and how others who operate in a similar environment are doing. The danger of focusing too much attention on this measurement tool is that it can lead to making investment decisions based on what others have done instead of thinking independently about investment opportunities. One of the very reasons we have been as successful as we've been in the last several years is because of our willingness to step outside the pack and chart a course very different from our peers. There is short-term risk associated with being different. However, it is our view that there is a greater long-term risk of not achieving our required return objectives if we are unwilling to think broadly in seeking out returns. MOSERS return comparison to our peers is found on page 68.

While benchmarks may seem like the perfect solution to every investment management issue, they are not without their problems. First, each person has their own individual perspective as to whether or not certain relative performance is good or bad. Second, there are multiple objectives the system must accomplish, making the utilization of one uniform measurement tool impossible. Finally, there is an interesting, but often difficult question to address, "What is the appropriate time frame over which performance should be measured?" We are programmed to look at annual performance numbers (as this report confirms). This time frame and even three and five year results are too short to derive meaningful information about the fund's long-term success in achieving its objectives. By focusing on the immediate, we run the risk of being short-sighted in our investment process and could compromise our long-term success by making rash decisions in order to beat a defined benchmark in the short-run. ***I believe strongly that the best way to earn high risk-adjusted returns is to be patient and just as importantly, to be contrarian - willing to stand alone.*** There will be times when this approach will cause our shorter-term performance to look bad relative to our peers. The success of our program during these times will be dependent upon our culture and our governance structure, both of which will help us to remain steadfast and not be overwhelmed by the urge to change course.

In closing, I would like to thank all of those who are involved in MOSERS' investment program in one way or another. Our board of trustees has consistently maintained the vision that has allowed us our flexibility, which in turn has generated much of our success. Our executive director possesses leadership qualities that have allowed us to feel comfortable leaving no stone unturned as we seek out investment opportunities. The internal team of investment professionals at MOSERS is second to none, and they deserve much of the credit for the performance record. Our investment consultant, Steve Holmes, and the team at Summit, continue to provide insights for many of the strategies we have successfully employed. The group of external service providers we have amassed is literally a "who's who" in the investment management world. This journey over the last ten years has been unbelievable, and I'm quite sure that the future will be met with its own set of challenges just as was the journey for Lewis and Clark. As we commemorate their historic travels, I am confident that MOSERS will strive to employ the same prudence and resolve as did they for the sake of current and future stakeholders.

Until next year,

Rick Dahl

Rick Dahl
Chief Investment Officer

Investment Consultant's Report

Summit Strategies Group

October 1, 2004

The Board of Trustees
Missouri State Employees' Retirement System
907 Wildwood Drive
Jefferson City, MO 65109

Dear Board Members,

The fiscal year ending June 30, 2004, was an outstanding year for the investment assets of the Missouri State Employees' Retirement System. The bear market that had such a major impact on everyone's investment portfolios ended in March 2003 (exactly 3 years after it started), and the market surged forward through June 2004. As a result, the total fund was up 17.1% for the fiscal year. This equates to asset growth from investments of over $940 million. Even with this big year, the bear market that preceded it was dramatic enough that the three- and five-year results still trail the actuarial assumption, although the 10-year result is a very healthy 10.1%. The results in all periods exceed the market-based benchmarks we established for the fund, which means that even when the markets didn't behave as we had hoped, the portfolio consistently added value and made the fund stronger and healthier than it would have been otherwise.

In preparation for writing this letter, I went back and read my previous efforts. It seems hard to believe that this is my 13th such letter, but it is. Historically, I've written (sometimes at great length) about investment markets and philosophies and how I continue to marvel at the efficiency of the decision-making process that the board and staff regularly carry out at MOSERS (last year's letter), but this year I am trying something new and taking a totally different direction.

In keeping with this year's annual report theme of remembering Lewis and Clark, I reflect upon Stephen Ambrose's book on the Corps of Discovery, *Undaunted Courage*. What I have always enjoyed about Ambrose's writing style is that regardless of the historic event he is covering, he creates a bond for the reader with the historical characters by delving into their feelings and relationships beyond just names, places, and dates. The overwhelming personal theme of his work on Lewis and Clark is the tremendous relationship they had with each other. Although they were very different in personality and skills, they complemented each other almost perfectly and therefore, were able to accomplish more than they had been instructed to, more than Jefferson could have hoped for, and all because of the strength of their very comfortable working relationship. My guess is that the rivers would have been charted and the wildlife chronicled regardless of the individuals involved, but the spirit of cooperation and mutual respect that these two explorers infused throughout their ranks directly enhanced the caliber of the effort and the final result.

My thoughts, as they shift from the Missouri River in 1804 to MOSERS in 2004, are that if I were chronicling my experience at MOSERS, I would be omitting a critical part of the story if I did not share my feelings with you. I have worked with many public pension plans over the years and hold many of them in high regard, but I must tell you that MOSERS' environment is truly unique in my experience. It is a genuine pleasure to be able to work for this organization. Somehow, a board full of politicians has remained totally apolitical. They respect each other and the staff they've assembled. The roles and responsibilities are clearly defined, and the board genuinely trusts its professionals and gives them healthy latitude to accomplish their goals. Additionally, they are all really nice people which, believe me, is a huge advantage.

If you ever walk into MOSERS' building, you'll quickly notice that everyone is smiling. The best way I can describe the atmosphere at MOSERS is this – they are all members of a winning team who are always pushing themselves to be better at what they do because everyone around them is pushing as well. While I'm the first to admit I don't understand the benefits side of the house, I have listened to many presentations by those folks and know they are constantly trying to be better at serving you. They talk to other plans for best practices and innovative ideas, monitor their turnaround time on inquiries, and are constantly looking for ways to get better information to the members in a shorter response time.

I do know something about the investment issues, and I can tell you that you have an extremely cohesive group of professionals looking out for your money. They believe (and the numbers back them up) they are better than most at what they do because they have been given the trust and latitude by the board to be more thoughtful, more nimble, and more focused. I hear other public fund staffers talk about the "stupid staff tricks" that their boards make them perform for political or personal reasons. Not here. MOSERS' investment team spends a higher percentage of its time on "pure" investment thinking, more than any other similar group I have seen.

So there are my thoughts. Light on technical investment jargon, but hopefully somewhat insightful for you, the reader. MOSERS in 2004 is a very special place because of the people who are there. While I'm sure a different group of folks would get the benefit checks out and the money invested, I think the focus on cooperation and continual improvement makes each of these areas that much better for you. It has certainly made my "journey" as consultant enjoyable, and I thought it was time this unique facet of MOSERS was recognized.

Sincerely,

Stephen P. Holmes, CFA
President

Investment Policy Summary

The investment policy is specifically designed to serve as a reference point for the management of system assets and outlines MOSERS' investment philosophy and practices. This document assists the board of trustees in carrying out their fiduciary responsibilities for the investment of system assets. In addition, it serves as a guide for staff in implementing investment objectives defined by the board.

Investment Objectives

MOSERS' board has established guiding principles with respect to the investment of system assets, which include 1) preserving the long-term corpus of the fund; 2) maximizing total return within prudent risk parameters; and 3) acting in the exclusive interest of the members of the system. In keeping with these three primary guiding principles, the board has established the following broad investment objectives:

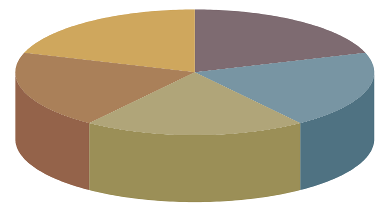
- Develop a real return objective (RRO)[1] that will:
    - Keep contribution rates reasonably level over long periods of time, absent changes in actuarial assumptions.
    - Maintain contribution rates consistent with historical levels ranging from 8% to 12% of covered payroll.
- Establish an asset allocation policy that is expected to meet the RRO over long periods of time, while minimizing volatility.
- Minimize the costs associated with implementation of the asset allocation through the efficient use of internal and external resources.

Investment Beliefs

MOSERS' internal investment staff and external asset consultant have established investment beliefs which serve as a guide in the implementation of the investment objectives adopted by the board. These beliefs help to form the basis of nearly every decision made within MOSERS' portfolio. From time to time, these beliefs may need slight modification to keep pace with the changing investment landscape; however, the fundamental concepts outlined in these beliefs should stand the test of time. The primary beliefs underlying MOSERS' investment program are as follows:

- **Diversification is critical because the future is unknown.** At the root of this belief is the knowledge that the future is unknowable. Accordingly, MOSERS' investment portfolio has been built upon the premise that very little is known about what the future holds, and as a result, the portfolio is structured to combat a variety of economic outcomes. The pie chart to the right reflects the various economic environments and the types of investments that should be expected to perform well in those environments. While staff may have views on the direction of the markets over the short-term, the adjustments to the portfolio will only be made at the margins to match those views. As a result, the portfolio will have significant diversification to provide risk reduction in a variety of markets.

Economic Diversification



Rising Growth
Equities
Corp./Mortg. Bonds
Emerging Markets
Timber
Real Estate
Commodities

Falling Growth
Treasuries
TIPS

Deflation
Long Treasuries

Rising Inflation
Timber
Real Estate
Emerging Markets
Commodities
TIPS

Falling Inflation
Equities
Corporate Bonds
Treasuries

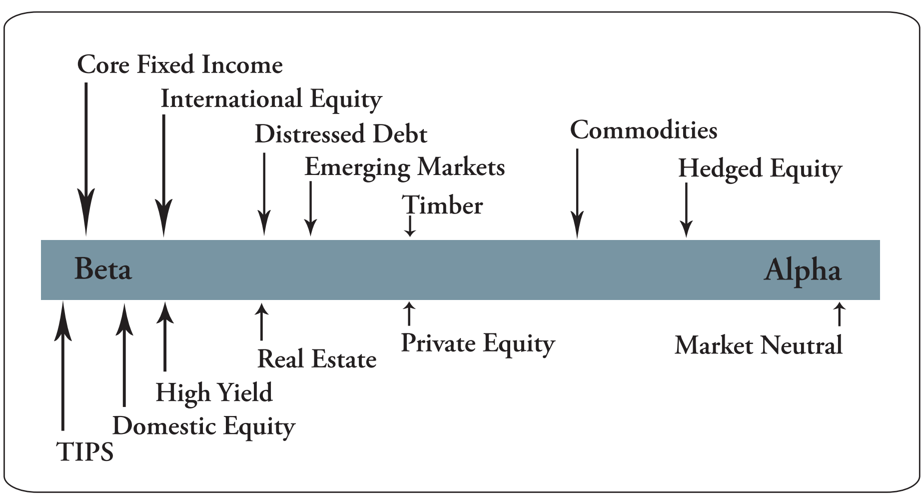
- **Every investment should be examined in the context of the two distinct return components – beta and alpha.** Beta is the return which is expected from simply having exposure to the market. It is the return that can be earned

1 The real return objective (RRO) is the rate by which the total return exceeds the inflation rate as measured by the CPI, U.S. City Average for all Urban Consumers (CPI-U). As of June 30, 2004, the real return objective was 5% after inflation.

by investing passively within a specific asset class. Exposures to beta can be purchased very cheaply, and over long periods of time, it is expected that returns from beta should be positive and coincide with the risk associated with a given asset class. Alpha, in contrast, is return generated through a manager's ability to select particular investments that perform better than the asset class as a whole. Alpha is a zero-sum game. For every winner, there is a loser on the other side. Historically, MOSERS' portfolio has been heavily weighted towards investments that provided mainly beta returns. In 2002, after the most recent asset/liability study, a greater emphasis was placed upon generating alpha returns within the portfolio, as it is expected that returns strictly from beta will not generate the returns necessary to fund the liabilities of the system. As illustrated in the chart below, several alpha-generating strategies are in place within the portfolio today.

- **Asset classes will be in and out of favor at different times and they all tend to be cyclical, thus flexibility is key.** This belief acknowledges that economies are cyclical, and thus it is only logical that certain investments will fair better than others depending upon the current economic environment. In order to make a "good" investment, the price one pays for an investment must be considered. In order to capitalize on potential opportunities that may arise due to asset classes being "cheap" or "expensive" relative to their historical norms, the board has granted the chief investment officer (CIO) the ability to make strategic sub-asset allocation decisions at the margins subject to predefined ranges.
- **This isn't about risk or return. It's about risk-adjusted returns with a long-term focus on the liabilities.** While it is easy to focus all attention on the returns a portfolio is able to generate, the risks relative to the liabilities of the system must be taken into consideration. Despite MOSERS' infinite time horizon, it must not be overlooked that there are benefits to be paid in the short run. In addition, the "cost of volatility" within the portfolio must not be underestimated as volatility has a dramatic impact on the contribution rate and thus the state's ability to fund the plan going forward.

Continuum of Beta and Alpha



Roles and Responsibilities

Board of Trustees

The board of trustees bears the ultimate fiduciary responsibility for the investment of system assets. Members of the board must adhere to state law and prudent standards of diligence with respect to their duties as investment fiduciaries. Accordingly, they are required to discharge their duties in the exclusive interests of the plan participants. They must also "act with the same care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a similar capacity and familiar with those matters would use in the conduct of a similar enterprise with similar aims.[2]" Specifically related to investments, the board is charged with the duties of establishing and maintaining broad policies and objectives for the investment program considering the recommendations of staff and the external asset consultant.

Executive Director

The executive director is appointed by and serves at the pleasure of the board. The board has given the executive director broad authority for planning, organizing, and administering the operations and investments of the system under broad policy guidance from the board. Specifically with regard to investments, the executive director is broadly responsible for the oversight of the investment program.

2 Section 105.688, RSMo - Investment Fiduciaries, Duties

The executive director must ensure the system assets are invested in accordance with the board's policies and that internal controls are in place to safeguard system assets. The executive director must also certify that all manager hiring and firing decisions and strategic allocation decisions are made in accordance with the board's governance policy.

CIO and Internal Staff
The CIO serves at the pleasure of the executive director, yet has a direct line of communication with the board on investment-related issues. The CIO has primary responsibility for the overall direction of the investment program. The CIO works with the external asset consultant and executive director in advising the board on policies related to the investment program. The CIO has primary responsibility for hiring and firing decisions related to investment service providers, but must have the approval of the external asset consultant in so doing. In addition, the executive director must certify that the decision was made in accordance with the board governance policy. The CIO is also charged with the responsibility of making strategic allocation decisions with the approval of the external asset consultant and certification of the executive director. Other responsibilities of the CIO include monitoring the investment of system assets, oversight of external money managers and the internally managed portfolios, and keeping the board apprised of situations which merit their attention. The internal investment staff is accountable to the CIO.

External Asset Consultant
Summit Strategies Group of St. Louis, Missouri serves as the external asset consultant. The external asset consultant serves at the pleasure of the board. The primary duties of the external asset consultant are to advise the board on policies related to the investment program and to provide a third party perspective and level of oversight to the investment program. The external asset consultant must also approve all manager hiring and firing decisions and strategic allocation decisions made by the CIO. The external asset consultant also provides advice and input to the CIO and internal investment staff on investment-related issues and money manager searches.

Internal Auditor
The internal auditor reports directly to the executive director and, if in the opinion of the internal auditor circumstances warrant, may report directly to the board. The internal auditor is independent of the system's investment operations and among other things, is responsible for providing objective audit and review services for the investment operations. It is the internal auditor's objective to promote adequate and effective internal controls at a reasonable cost, which results in suggested improvements that will lead to economies and efficiencies in the investment operations.

Master Custodian
Mellon Financial Corp. of Boston, Massachusetts serves as the master custodian of system assets, except in cases where investments are held in partnerships, commingled accounts, or unique asset classes, where it is impossible for them to do so. The master custodian is responsible for maintaining the official book of record, providing performance reports, and serving as an additional layer of risk control in the safekeeping of system assets.

Asset Allocation
The system's asset allocation is regarded as one of the most important decisions in the investment management process. The current asset allocation is designed to achieve the long-term required return objectives of the system, given certain risk constraints. The current asset allocation reflects the need for a diversified portfolio which will perform well in a variety of economic conditions and will help reduce the portfolio's overall volatility. In determining the optimum mix of assets, the board considers five factors:

- The expected rate of return for each asset class.
- The expected risk of each asset class.
- The correlation between the rates of return of the asset classes.
- The investment objectives and risk constraints of the fund.
- The impact of portfolio volatility on the contribution rate.

The policy allocation as of June 30, 2004, is illustrated in the table at the top of page 65.

While the board maintains a set policy allocation mix, they have taken steps to provide flexibility at the sub-asset class level by granting authority to the CIO, with the approval of the external asset consultant and certification of the executive director, to make sub-asset class allocation decisions based upon expectations for each sub-asset class. This flexibility has allowed the system to take advantage of changing market conditions. The board has placed

Policy Allocation

Asset Class	Target Allocation	Strategic Allocation Ranges
Public equity	50.0%	
Domestic equity	27.5	15.0 to 40.0%
Hedged equity	5.0	0.0 to 10.0
Int'l developed equity	15.0	5.0 to 25.0
Emerging market equity	2.5	0.0 to 5.0
Public debt	30.0	
Core fixed income	10.0	5.0 to 15.0
TIPS	10.0	5.0 to 15.0
High yield bonds	5.0	0.0 to 10.0
Market neutral	5.0	0.0 to 10.0
Alternatives	20.0	
Distressed debt	2.5	0.0 to 5.0
Commodities	2.5	0.0 to 5.0
Timber	5.0	2.5 to 7.5
Private equity	5.0	2.5 to 7.5
REITs/Real estate	5.0	2.5 to 7.5

ranges on the sub-asset class allocations in order to maintain appropriate risk controls. These ranges are included in the table above.

Rebalancing
It is the responsibility of staff to ensure that the asset allocation is maintained by adhering to the rebalancing policy. Staff has engaged NISA Investment Advisors, LLC of St. Louis, Missouri, to assist in the oversight and implementation of the rebalancing policy. MOSERS utilizes a combination of cash market and exchange-traded futures transactions to maintain the total fund allocation at the broad policy level. Month-end reviews are conducted to bring the portfolio back within allowable ranges of the broad policy targets.

Risk Controls
MOSERS' investment program faces numerous risks; however, the primary risk to MOSERS is that the assets will not support the liabilities over long periods of time. In order to control for this risk and numerous other risks that face the system, the board has taken the following steps to help protect the system on an ongoing basis:

- Actuarial valuations are performed each year to ensure the system is on track to meet the funding objectives of the plan. In addition, every five years an external audit of the actuary is conducted to ensure that the assumptions being made and calculation methods being utilized are resulting in properly computed liabilities.
- Asset/liability studies are conducted at least once every five years. The purpose of this study is to ensure that the current portfolio design is structured to meet the liabilities. This is also a time when investment expectations are reexamined in a more detailed way.
- A governance policy which incorporates investment limitations is in place to ensure that board policies are clearly identified. Within these documents, the desired outcomes are outlined, individuals are identified as to their responsibilities, and details are lined out as to how the outcomes will be measured by the board. Reporting requirements are clearly identified to ensure appropriate checks and balances are in place. In addition, annual performance audits are conducted to ensure the measurement tools and methodology being utilized to gauge performance are suitable.

Performance Objectives and Monitoring Process
Total Fund
Generating returns net of expenses in excess of the RRO of 5% after inflation remains the primary performance objective for the total fund over the long-term. The reason for the long-term focus on this objective is to preclude the temptation to overreact to events in the marketplace that have no relevance in the management of the relationship between the assets and liabilities. The resulting dilemma is the conflicting need to evaluate investment policy implementation decisions over shorter time frames while maintaining the longer-term focus necessary to manage and measure performance relative to the RRO. To address this problem, the board evaluates performance relative to policy and strategy benchmarks which help to evaluate the board's broad policy decisions and staff's implementation decisions. Policy benchmarks measure broad investment opportunities of each asset class in which MOSERS has chosen to invest. The strategy benchmarks represent decisions made by the CIO to strategically deviate from the policy asset allocation for each sub-asset class (mid-point of the strategic allocation range). The return of the strategy benchmarks are determined based

upon the actual weight of the asset class multiplied by the appropriate benchmark.

The policy and strategy benchmarks are used in the following manner to evaluate decisions made by the board and staff:

- **Board Decisions:** The value added through board policy decisions is measured by the difference between the total fund policy benchmark return and the RRO. This difference captures the value added by the board through policy asset allocation decisions relative to the return necessary to fund the liabilities. A policy benchmark return greater than the RRO reflects value added through board decisions. A policy benchmark return less than the RRO reflects losses or shortfalls in performance in funding the liabilities. These policy decisions are measured over long periods of time.
- **CIO and External Asset Consultant Decisions:** There are two components to decisions made by the CIO and external asset consultant which are monitored by the board on an ongoing basis. These include 1) strategic sub-asset class allocation decisions and 2) implementation decisions.

  <u>Strategy Decisions</u> are sub-asset class allocation choices made by the CIO with the approval of the external asset consultant and certification of the executive director to deviate from the policy benchmark weight. The value added through these decisions to overweight or underweight these sub-asset classes is measured by the difference between the strategy benchmark return and the policy benchmark return. This difference captures the value added by the CIO through sub-asset class strategic decisions relative to the board's broad policy allocation decisions. A strategy benchmark return greater than the policy benchmark return reflects value added through the sub-asset class allocation decisions. A strategy benchmark return less than the policy benchmark return reflects losses to fund performance based upon strategy decisions. Strategy decisions should be measured over all periods of time, with majority weight placed on outcomes that have occurred over a market cycle.

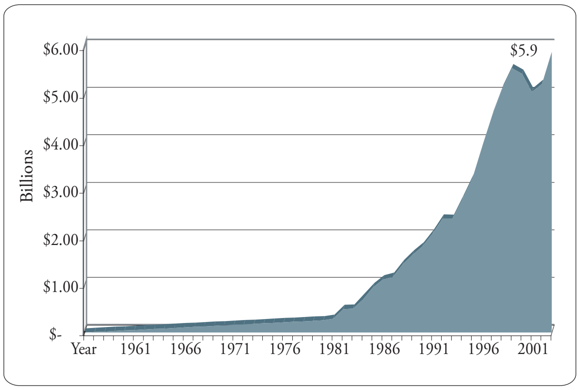
  <u>Implementation Decisions</u> are money manager selection choices made by the CIO with the approval of the external asset consultant and the certification of the executive director that the decision was made in accordance with the board's adopted governance policy. The value added through these decisions is measured by the difference between the actual portfolio return and the strategy benchmark return. This difference captures the value added through these manager selection decisions. An actual portfolio return greater than the strategy benchmark return reflects value added through these manager selection decisions. An actual portfolio return less than the strategy benchmark return reflects losses to fund performance based upon implementation decisions. Implementation decisions should be measured over all periods of time, with a majority weight placed on outcomes that have occurred over a market cycle.

  The board receives performance information on a quarterly basis to help ensure adequate monitoring of the fund's overall performance objectives.

Asset Classes

At the broad asset class level, policy and strategy benchmarks have been established to measure board and CIO/external asset consultant decisions. At the manager level, performance is measured against appropriate benchmarks for each particular investment mandate. Investment guidelines have been established for each manager outlining specific expectations for each portfolio. In addition, many managers are employed with performance-based fee structures which help to align the manager's interest with the total fund objectives.

Total Fund Review



Sub-Asset Class Returns for Fiscal Year Ended June 2004

Sub-Asset Class	Fiscal Year Return	Contribution to Total Return
Domestic equity	26.5%	6.7%
Developed int'l equity	31.3	5.3
Emerging markets	32.5	1.2
Hedged equity	10.1	0.5
Total public equity	**26.9**	**13.7**
Core bonds	(0.2)	(0.0)
High yield	10.3	0.5
TIPS	6.4	0.6
Market neutral	4.4	0.3
Total public debt	**4.6**	**1.4**
Real estate	18.0	0.8
Commodities	29.2	0.8
Distressed debt	6.5	0.1
Timber	(5.7)	(0.2)
Private equity	13.4	0.4
Illiquid assets	1.7	0.0
Total alternatives	**11.4**	**1.9**
Cash[3]	**25.2**	**0.1**
Total fund	**17.1**	**17.1**

3 The return for cash includes income from securities lending, securities litigation, and other miscellaneous sources.

4 CPI Source: United State Department of Labor, Bureau of Labor Statistics (not seasonally adjusted). MOSERS' real return is the excess return over the CPI utilizing the formula: Real = (1+Nominal)/(1+CPI)-1.

Market Value

As of June 30, 2004, MOSERS' investment portfolio had a market value of $5.9 billion. The chart to the left illustrates the growth of MOSERS' portfolio since the system's inception.

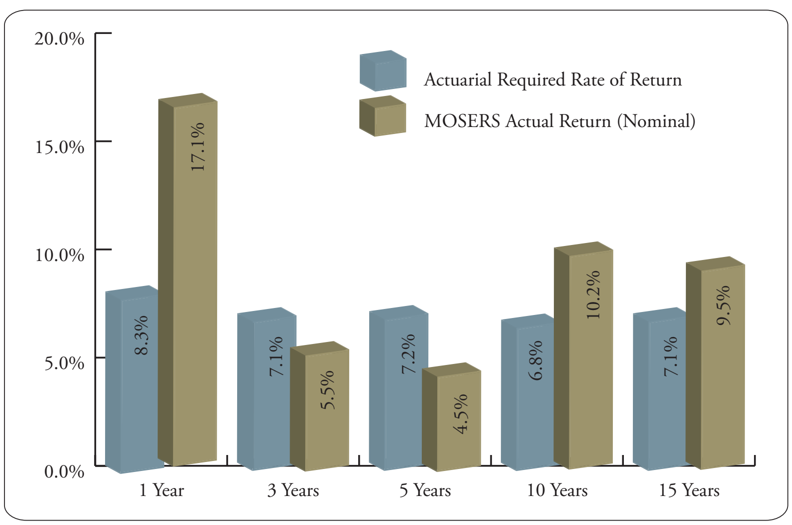
Investment Performance

MOSERS' investment portfolio returned 17.1% in FY04. Performance returns were calculated using a time-weighted rate of return based on market values. Performance for the fiscal year may be attributed to the various sub-asset classes. The table to the left illustrates each sub-asset classes' contribution to the total return.

Investment Performance vs. the Required Return Objective

The first measure of comparison for the portfolio's investment performance is to determine how well the fund performed relative to the RRO. The RRO is the rate established by the board that MOSERS' investment portfolio must earn in order to meet future plan obligations after accounting for inflation. The actuarial funding objective is to produce a return that exceeds the rate of inflation by 5% per year. The best known measure of inflation is the Consumer Price Index (CPI).[4] For purposes of examining fund performance relative to the RRO, MOSERS is interested in long periods of time. Given the volatile nature of the investment markets, MOSERS should not expect the portfolio to always meet the RRO in the short-term. From the bar chart below, one can see that MOSERS' investment returns have exceeded the RRO over long periods of time.

Total Fund Actual Return vs. Real Return Objective



Investment Performance vs. Benchmark Comparisons

The board compares fund returns to the following two benchmarks: the policy benchmark and the strategy benchmark.

Policy Benchmark – The policy benchmark provides an indication of the returns that could be achieved (excluding transaction costs) by a portfolio invested passively in the broad market with percentage weights allocated to each asset class in MOSERS' policy asset allocation.

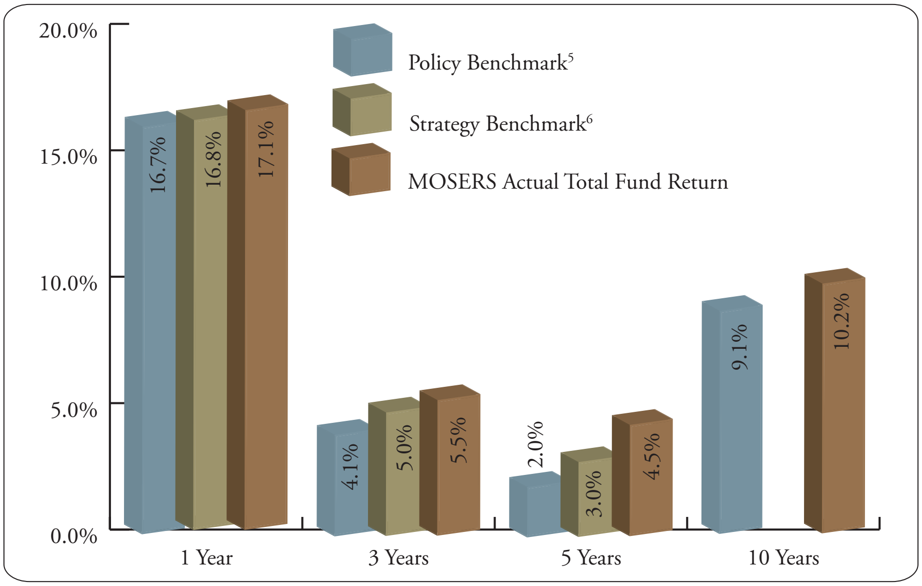
Strategy Benchmark – The strategy benchmark is more narrowly defined and focuses on the sub-asset class allocation decisions made by the chief investment officer. Prior to 1995, strategy benchmarks were not clearly defined.

Historical returns are displayed in the bar chart at top right.

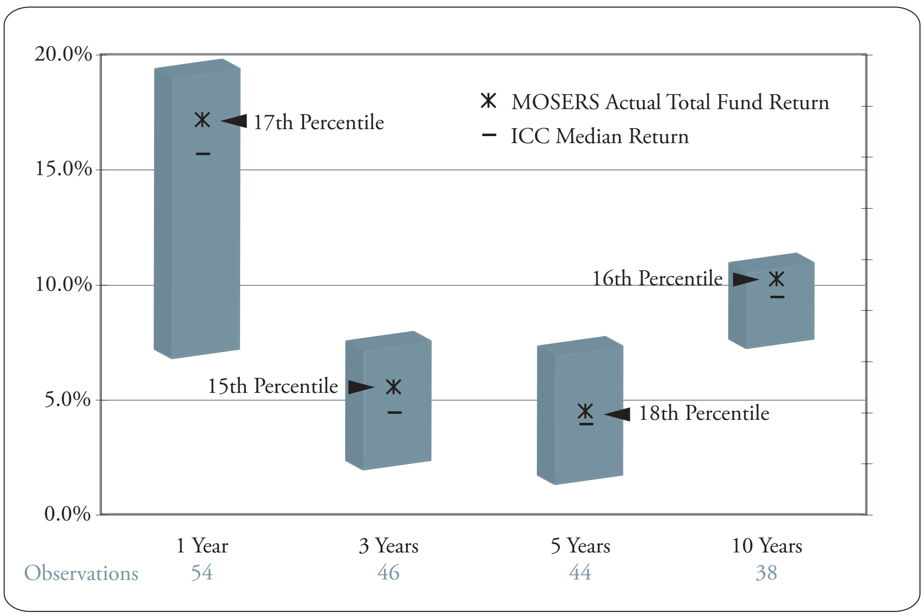
By comparing the policy benchmark to the strategy benchmark, the board is able to determine what value is being added through strategic decisions made by the CIO to position the fund away from the policy allocation. Value is being created if the strategy benchmark returns exceed the policy benchmark returns.

Similarly, by comparing the actual return to the strategy benchmark, the board will, over time be able to judge the success or failure of the staff and the consultant in implementing strategic decisions. The primary implementation decision is in determining which managers the fund should employ. Value is being added from manager selection if the total fund return exceeds the strategy benchmark return.

Total Fund Return vs. Benchmarks



Total Fund Return vs. ICC Universe



Investment Performance vs. Peer Universe

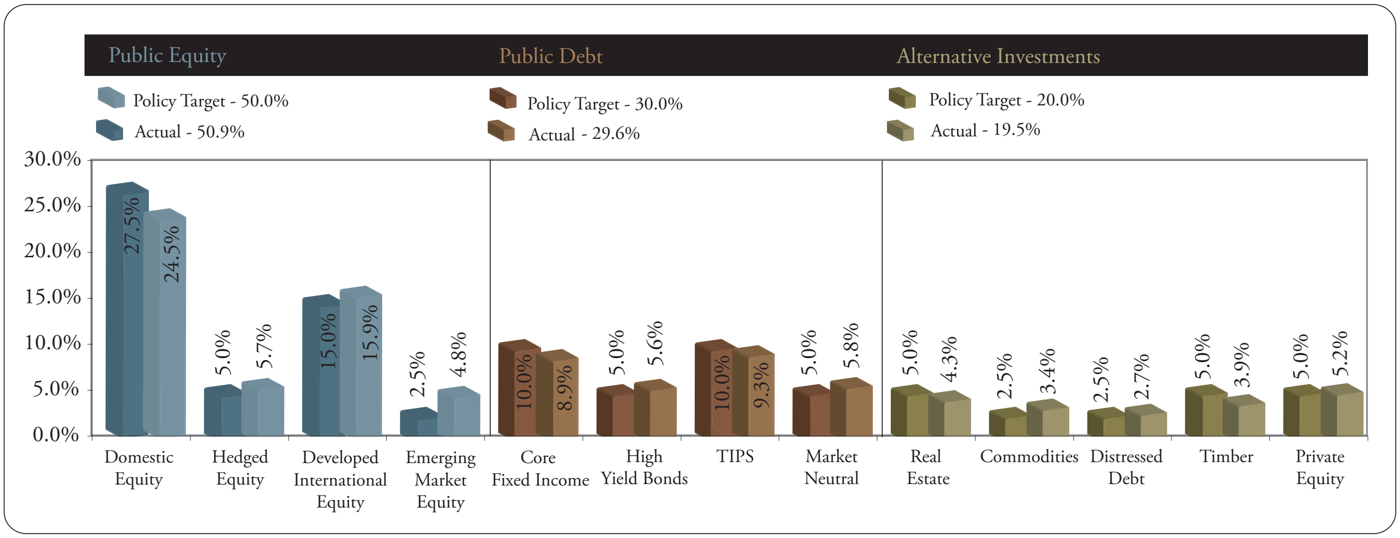
To a lesser extent, the board compares total fund performance to the returns generated by a peer group of public pension funds generated by the Independent Consultants Cooperative (ICC)[7] universe. For FY04, MOSERS' total return of 17.1% ranked in the top 20% (17th percentile) of the ICC universe. Historical data about MOSERS' total fund performance relative to this universe is provided in the second chart above.

5 As of 6/30/04, the policy benchmark was comprised of the following components: 50% total public equity policy benchmark, 30% total public debt policy benchmark, 20% total alternative investments policy benchmark.

6 As of 6/30/04, the strategy benchmark was comprised of the following components: 50% total public equity strategy benchmark, 30% total public debt strategy benchmark, 20% total alternative investments strategy benchmark.

7 The ICC is a cooperative of 17 independent investment consultants from across the U.S. and one major custodial bank that collectively provides performance data to create the universe of funds with assets in excess of $1 billion. Note that performance within this universe is captured gross of fees.

Total Fund Policy vs. Actual Allocation (As a Percentage of the Total Fund)



Asset Allocation Overview

As of June 30, 2004, the board's broad policy allocation mix was 50% public equity, 30% public debt, and 20% alternative investments. The chart above illustrates the policy target as of June 30, 2004, for each sub-asset class, along with the actual strategic allocation to each type of investment.

In the spring of 2002, staff in conjunction with the external asset consultant, conducted an asset/liability study to reexamine the policy asset allocation of the fund. The intent was to examine the portfolio's ability to generate the required rate of return given return expectations for the various asset classes represented in the portfolio, and to lower the total portfolio volatility. The formal study revealed that MOSERS' portfolio could be further diversified in order to protect it from a variety of economic scenarios that might play out over time, thus reducing the portfolio volatility and ultimately contribution rates.

In addition, the board granted flexibility to the CIO to make strategic decisions related to the allocation subject to predefined ranges. A strategic decision should be thought of as any decision that might cause MOSERS' actual portfolio to differ from the policy asset allocation. This has allowed MOSERS to capitalize on investment opportunities at the margin by overweighting asset classes that are viewed as "cheap" relative to their historical norm and underweighting asset classes that are "expensive" relative to their historical norm. Since being granted this authority in 2002, the ability to make strategic asset allocation decisions along with manager hiring decisions has added 0.8% of return annually, or approximately $45 million of additional annual profit to the portfolio.

Schedule of Investment Portfolios by Asset Class

As of June 30, 2004

	Fair Value
Public equity	
Domestic equity	$ 1,443,699,237
International developed equity	935,763,637
Emerging market equity	282,966,595
Hedged equity	336,449,126
Total public equity	2,998,878,595
Public debt	
Core fixed income	521,862,133
High yield bonds	331,326,126
TIPS	547,863,361
Market neutral	343,484,497
Total public debt	1,744,536,117
Alternative investments	
Real estate	254,099,947
Commodities	201,566,972
Distressed debt	154,934,518
Private equity	303,281,784
Timber	232,000,023
Total alternative investment	1,145,883,244
Other portfolios	
Other investments	6,576,358
Cash reserve	15,034,139
Total other	21,610,497
Grand total	$ 5,910,908,453

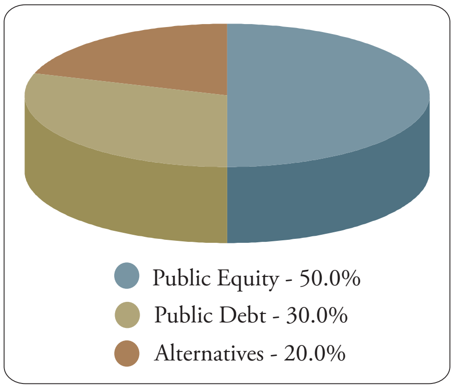
Reconciliation to *Statements of Plan Net Assets*	
Total portfolio value	$ 5,910,908,453
STIF	(284,199,360)
Uninvested cash	(19,825)
Cash held at Lehman Brothers	(246,000)
Accrued income	(26,549,988)
Accounts receivable securities sold	(140,404,814)
Accounts payable securities purchased	179,856,429
Incentive fees payable	19,776,836
Accrued security lending income	424,139
Investments per *Statements of Plan Assets*	$ 5,659,545,870

Investment Manager Fees

As of June 30, 2004

	Management Fees Paid	Incentive Fees Paid	Total Fees Paid	Incentive Fees Accrued
Public equity managers				
Americap Advisors - domestic all-cap	$ 135,403	$ 0	$ 135,403	$ 0
Capital Guardian Trust - domestic all-cap	460,496	0	460,496	0
Legg Mason - domestic all-cap	0	843,897	843,897	3,596,095
Oak Associates - domestic all-cap	0	(3,639,990)	(3,639,990)	0
DFA - domestic SMID-cap	388,591	0	388,591	0
Oakbrook Investments - enhanced S&P 500	348,182	0	348,182	0
Mastholm - int'l developed	1,470,992	0	1,470,992	0
Merrill Lynch - enhanced EAFE	417,344	0	417,344	0
Silchester - int'l developed	1,855,556	0	1,855,556	0
Blakeney - emerging markets	584,424	1,020,238	1,604,662	0
GMO - emerging markets	1,237,711	0	1,237,711	0
Merrill Lynch - enhanced EMF	157,676	0	157,676	0
Oaktree Capital Management - emerging markets	659,973	0	659,973	864,571
Blackstone - hedged equity	3,855,084	0	3,855,084	0
Total public equity managers	11,571,432	(1,775,855)	9,795,577	4,460,666
Public debt managers				
Blackrock - MBS/ABS	225,087	0	225,087	0
NISA - fixed income	294,745	0	294,745	0
Blackrock - high yield	1,211,825	0	1,211,825	0
Blackstone - market neutral	3,595,645	583,832	4,179,477	0
Total public debt managers	5,327,302	583,832	5,911,134	0
Alternative investment managers				
Blackstone - relative value	583,879	272,740	856,619	0
Blackstone - real estate	806,824	53,529	860,353	0
Oaktree Capital Management - real estate	614,052	0	614,052	0
TCW - mezzanine debt	0	0	0	0
NISA - commodities	291,528	856,990	1,148,518	0
DDJ Capital Management - distressed debt	750,000	0	750,000	416,665
MHR Fund Management - distressed debt	855,274	0	855,274	2,389,266
Oaktree Capital Management - distress debt	1,467,628	7,315,463	8,783,091	9,055,072
Wayzata Investment Partners - distressed debt	750,000	0	750,000	3,455,167
Blum Capital - private equity	128,225	0	128,225	0
Catterton Partners - private equity	774,033	0	774,033	0
Relational Investors - private equity	520,883	486,706	1,007,589	0
Hoisington - treasuries (deflation hedge)	176,555	0	176,555	0
Total alternative investment managers	7,718,881	8,985,428	16,704,309	15,316,170
Other managers				
NISA - rebalancing	165,794	0	165,794	0
Brinson - private equity	1,080	0	1,080	0
Total other managers	166,874	0	166,874	0
Grand totals	$ 24,784,489	$ 7,793,405	$ 32,577,894	$ 19,776,836

Public Equity Asset Class Summary



Highlights

As of June 30, 2004, MOSERS' public equity portfolio had a market value of $3 billion, representing 50.9% of the total fund. Performance for the fiscal year was 26.9% net of fees and expenses.

The public equity portfolio underwent additional changes to move the total fund closer to full implementation of the board's asset allocation adopted in June of 2002 as a result of the asset/liability study. Here are just a few of the highlights:

- The international developed equity policy benchmark allocation was reduced to 15% during the fiscal year to bring it in line with the board's policy allocation.
- Blakeney Management was hired to manage an emerging market equity allocation.
- Grantham, Mayo, Van Otterloo & Co. (GMO) was hired to manage an emerging market equity allocation.

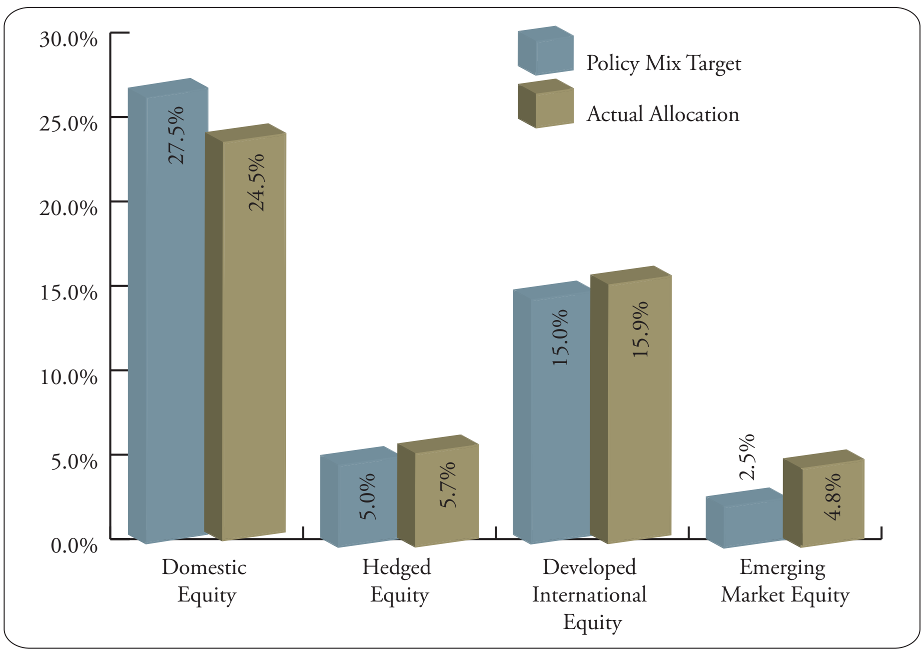
Portfolio Structure

The public equity portfolio has a target allocation of 50% of the total fund as illustrated in the pie chart above. The portfolio is comprised of four sub-asset classes which include domestic equity, hedged equity, international developed equity, and emerging market equity. The bar chart below illustrates the actual allocation relative to the board's policy allocation for each sub-asset class. This reflects the CIO's strategic decisions to overweight or underweight sub-asset classes as of June 30, 2004. These decisions are confined to pre-established ranges set by the board to provide risk controls within the portfolio. The table at the bottom of this page summarizes the sub-allocation ranges established by the board.

Market Overview

The equity markets in FY04 rebounded strongly from the negative returns generated in each of three previous fiscal years. U.S. equities returned 20% for FY04. The developed international markets did even better with a 29% return, while emerging markets led the pack with a return of 33%. However, returns were not evenly distributed

Public Equity Policy vs. Actual Allocation (As a Percentage of the Total Fund)



Public Equity Strategic Sub-Asset Allocation Ranges (As a Percentage of the Total Fund)

Sub-Asset Class	Minimum	Maximum	Policy Target
Domestic Equity	15.0%	40.0%	27.5%
Hedged Equity	0.0	10.0	5.0
Developed International Equity	5.0	25.0	15.0
Emerging Market Equity	0.0	5.0	2.5

throughout the year as the first six months provided about 80% of the returns.

Performance in the first half might be attributed to several things. The economy improved as did investor psychology. Unemployment dropped to the lowest levels since October of 2002 and fewer people were losing jobs. But likely the most important factor was improvement in corporate earnings. During the second half, focus had shifted to the belief that higher interest rates were around the corner, and the reality of higher energy prices were felt at the gas pumps. Both of these factors contributed to a lackluster second half with the U.S. market up a modest 3.5%.

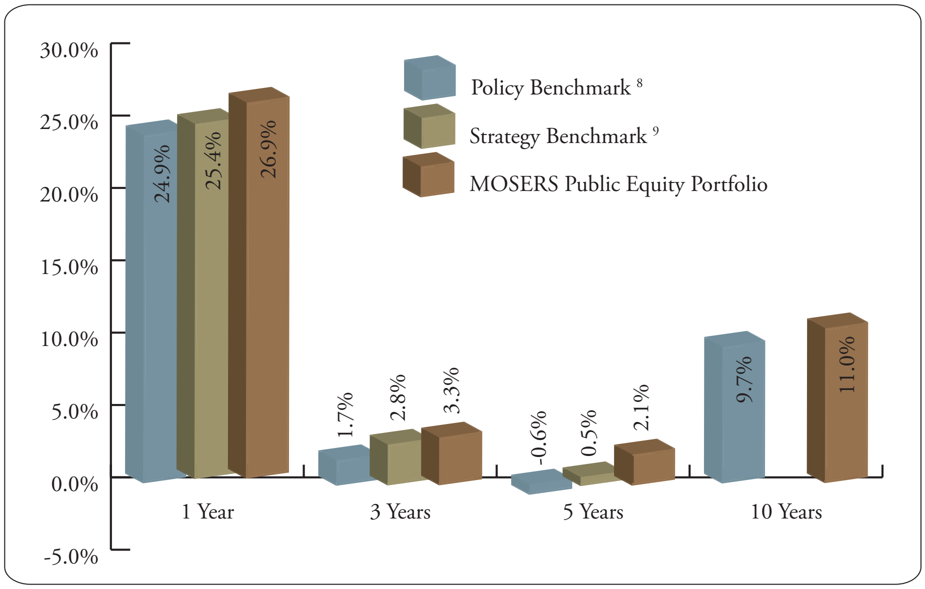
The non-U.S. markets followed the U.S. lead for the most part. The first half provided over 85% of the return as the major international markets saw conditions similar to the domestic market. Rising oil prices and the threat of a slow down in China put a damper on the positive mood. For the final six months of the fiscal year, the market was up a little over 4%. The Japanese market was up 40% in U.S. dollar terms after many poor years. The decline in the value of the dollar added over 10% of this return.

MOSERS continues to be concerned about returns from equities in the future. It appears that all equity markets are at best fairly valued. The U.S. presidential election, events in the Middle East, and the threat of terrorism could impact the markets in the near-term while in the longer-term, valuations will be the driving force behind returns.

Performance

The public equity portfolio returned 26.9% for the fiscal year, exceeding the policy benchmark return of 24.9% and the strategy benchmark return of 25.4% as illustrated in the bar chart at the top of this page. FY04 proved to be an exceptional year for the public equity markets, both domestically and internationally. The positive performance of the actual portfolio relative to the policy benchmark shows the value added by staff and the external asset consultant through strategic decisions and manager selection decisions. The strategy benchmark is compared to the policy benchmark to capture the value added by strategic allocation decisions. In FY04, 0.5%, or approximately $13.5 million of value was added through strategic allocation decisions. In order to capture the impact of manager selection decisions, the actual return is compared to the strategy benchmark. In FY04, manager selection decisions added 1.5% of performance, or approximately $39 million.

Public Equity Return vs. Benchmarks



Public Equity Allocation - Top Ten Holdings

Ten Largest Holdings as of June 30, 2004	Market Value	Percent of Total MOSERS Public Equity Portfolio
General Electric Co.	$33,225,876	1.1%
Microsoft Corp.	31,112,464	1.0
Pfizer Inc.	27,834,332	0.9
Talisman Energy Inc.	19,038,986	0.6
Cicso Systems Inc.	18,778,268	0.6
Tesco Plc	18,458,972	0.6
Citigroup Inc.	17,913,288	0.6
Intel Corp.	17,540,021	0.6
Applied Materials Inc.	17,459,603	0.6
Exxon Mobil Corp.	17,272,381	0.6

Top 10 Holdings

The top 10 holdings within the public equity portfolio as of June 30, 2004, are illustrated in the table above. A complete listing of holdings is available upon request.

8 As of 6/30/04, the public equity policy benchmark was comprised of the following components: 65% Russell 3000, 30% MSCI EAFE Net, and 5% MSCI EMF.

9 As of 6/30/04, the public equity strategy benchmark was comprised of the following components: 48.1% domestic equity strategy benchmark (comprised of the S&P 500, Russell 2500 Value, and Russell 3000), 11.2% Russell 3000, 31.2% MSCI EAFE Net, and 9.5% MSCI EMF.

DOMESTIC EQUITY

Market Value
The domestic equity allocation was $1.4 billion, or 24.5% of the total fund as of June 30, 2004.

Summary of Portfolio
MOSERS maintains a significant allocation to publicly-traded shares of corporations domiciled in the U.S. Domestic equities are held in broadly diversified portfolios representing a variety of styles, sectors, and market capitalizations. The domestic equity component is expected to contribute significantly to the fund's achievement of a long-term real return in excess of the 5% objective set by the board due to equities' historic return premium over inflation. In addition, MOSERS would expect this component to perform well in periods of falling inflation and rising growth and offer income potential through dividend payments. As of June 30, 2004, MOSERS was underweight relative to the policy benchmark in this sub-asset class as valuations relative to the other sub-asset classes within public equity appear somewhat high. In addition, a continued weakening in the dollar is expected and should hurt this sub-asset class relative to the non-U.S. equity alternatives.

Statistics
The table at top right displays the statistical characteristics of the domestic equity portfolio as of June 30, 2004, with comparisons shown to the Russell 3000 Index.

Investment Advisors
As of June 30, 2004, MOSERS had contracts with eight external investment advisors who manage 80% of the domestic equity portfolio. The remaining 20% is managed internally by staff in a passive S&P 500 Index fund. In FY04 there were no new managers hired or terminated within the domestic equity portfolio. Management expenses for these managers can be found on page 71 under the total fund overview section of this report. A listing of these managers is provided in the middle table above.

Brokerage Activity
Brokerage activity within the domestic equity portfolio throughout the fiscal year is captured on the page 75.

Soft Dollar Expenditures
In the fiscal year ended June 30, 2004, MOSERS' domestic equity managers declared $244,711 of the commissions generated were utilized to acquire a variety of services and research information. These expenditures, referred to as soft dollars (expendable excess commissions), are permitted under current SEC guidelines and represent 11.8% of MOSERS' agency commissions. These expenditures are illustrated in the bottom table above.

Statistics

Characteristics	Domestic Equity Portfolio	Russell 3000
Number of securities	1,075	2,998
Average market capitalization	$60.2 B	$77.2 B
Portfolio yield	1.3	1.6
Portfoio P/E	23.2	21.3
Portfolio beta vs. Russell 3000	1.2	1.0
Price/Book ratio	2.8	2.9

Schedule of Investment Advisors

Investment Advisor	Style	Portfolio Market Value
AmeriCap Advisers, LLC	Active all-cap	$ 169,811,419
Capital Guardian Trust Company	Active all-cap	172,921,586
Dimensional Fund Advisors, Inc.	Enhanced SMID-cap	170,523,079
Internal Staff	Passive S&P 500 Index	292,425,784
Legg Mason Capital Management, Inc.	Active all-cap	164,757,050
NISA Investment Advisors, LLC	Domestic equity futures - rebalancing program	40,429,888
Oak Associates, Ltd.	Active all-cap	130,718,489
OakBrook Investments	Enhanced S&P 500 Index	302,111,943
Total		$1,443,699,238

Soft Dollar Expenditures

Types of Services Acquired	Commissions Used	Percentage of Total
Trading/Analytic Systems	$ 87,461	35.7%
Research Services	35,902	14.7
Portfolio Mgmt. Systems	6,610	2.7
Pricing Services	3,904	1.6
Exchange Fees	8,560	3.5
Transaction Cost Analysis	23,700	9.7
Market Research	78,574	32.1
Total	$244,711	100.0%

Domestic Equity Brokerage Activity

Brokerage Firm	Shares Traded	Dollar Volume of Trades	Commissions Dollar Amount	Commissions Value Per Share
U.S. Clearing	47,556,271	$ 487,521,263	$ 656,862	$0.01
Instinet	10,552,477	212,705,040	229,390	0.02
Jefferies & Co.	6,934,565	225,706,679	175,937	0.03
Cantor Fitzgerald	4,807,992	166,729,511	104,274	0.02
Bear Stearns	7,662,010	121,344,408	93,236	0.01
Citigroup Global Markets	2,620,635	62,299,917	89,067	0.03
Goldman Sachs	1,009,960	25,949,879	39,932	0.04
Lynch, Jones & Ryan	1,885,254	32,542,865	38,103	0.02
Guzman & Co.	2,613,506	67,677,239	37,985	0.01
CS First Boston	845,111	23,756,097	33,696	0.04
B Trade Services LLC	1,080,419	13,628,917	32,873	0.03
Merrill Lynch	643,464	17,190,915	29,921	0.05
Knight Securities Broadcort	511,380	10,738,818	24,113	0.05
Capital Institutional Services	440,972	7,316,264	23,006	0.05
Jones & Associates	450,949	8,279,029	21,265	0.05
Bank of America	392,000	11,372,694	17,368	0.04
Investment Technology Group	946,488	17,246,350	17,066	0.02
Lehman Brothers	591,210	17,762,027	16,162	0.03
Weeden & Co.	308,500	6,537,428	16,130	0.05
Heflin & Co.	311,400	5,899,266	14,876	0.05
Nutmeg Securities	289,100	6,589,627	14,876	0.05
ISI Group Inc.	291,000	12,572,090	14,550	0.05
Williams Capital Group	251,700	4,619,168	12,585	0.05
Bridge Trading	230,600	4,236,874	9,627	0.04
La Branche Financial	188,400	2,479,531	8,927	0.05
National Financial Services	172,761	2,916,664	8,897	0.05
Oppenheimer & Co.	175,400	1,588,457	8,767	0.05
Suntrust Capital Markets	160,000	2,938,820	8,585	0.05
Morgan Stanley	180,600	6,117,092	8,100	0.04
Allen & Co.	235,384	3,693,117	7,989	0.03
Raymond James	147,000	3,578,848	7,742	0.05
Charles Schwab	148,664	2,327,768	7,159	0.05
Fidelity Capital Markets	124,850	3,371,404	7,065	0.06
Strome Susskind	120,600	3,854,783	7,012	0.06
A.G. Edwards & Sons	165,300	1,405,821	6,975	0.04
Other (35 additional brokerage firms)	2,352,606	56,845,147	108,729	0.05
Total	97,398,528	$1,661,339,817	$1,958,847	0.02

HEDGED EQUITY

Market Value
The hedged equity allocation was $336.5 million or 5.7% of the total fund as of June 30, 2004.

Summary of Portfolio
The hedged equity portfolio was added to the total fund in FY03. Hedged equity managers utilize skill-based investment strategies, which allow them to take advantage of periodic inefficiencies that may exist within the market. Hedged equity managers seek to produce consistent returns in various economic environments. The ultimate goal within the public equity portfolio is to provide downside protection in slumping equity markets. MOSERS utilizes a fund-of-funds approach to gain exposure to this asset class. This portfolio targets about 40% of the volatility of the broad U.S. equity market which should help to cushion total fund returns during periods of negative returns from stocks. As of June 30, 2004, MOSERS' weight to this sub-asset class was slightly over the policy allocation weight of 5%.

Statistics
The table at top right displays the statistical characteristics of the hedged equity portfolio for MOSERS as of June 30, 2004.

Statistics

Characteristics	For Life of the Fund
Number of managers within the fund	20
Annualized return (net)	10.3%
Annualized standard deviation	3.5%
Sharpe ratio	2.6
Beta (0.4 relative to the S&P 500 Index)	0.2
Alpha (annualized)	4.4%
Index correlation - S&P 500 Index	0.7

Schedule of Investment Advisors

Investment Advisor	Style	Portfolio Market Value
Blackstone Alternative Asset Management	Long/short	$336,449,126

Investment Advisors
In FY04, MOSERS increased its allocation with Blackstone Alternative Asset Management, whom was hired in FY03 as a strategic partner to make investments within the hedged equity sub-asset class. In addition, Blackstone provides ongoing consulting and education to staff. The second table above summarizes our investments with them as of June 30, 2004. Management fee information may be found on page 71 of this report.

INTERNATIONAL DEVELOPED EQUITY

Market Value
As of June 30, 2004, the international developed equity portfolio was $935.8 million, or 15.9% of the total fund.

Summary of Portfolio
MOSERS' international developed equity allocation allows for the participation in the growth of non-U.S. companies. Historically, this asset class has delivered returns in excess of inflation, thus enhancing the total fund's ability to achieve the RRO of 5%. It is anticipated that this sub-asset class will perform well in periods of falling inflation and periods of rising growth. In addition, this asset class provides diversification to the total equity portfolio. As of June 30, 2004, MOSERS' allocation was slightly over the policy allocation target of 15%.

Statistics
The table at top right displays the statistical characteristics of the international developed equity portfolio as of June 30, 2004, with comparisons shown to the Morgan Stanley Capital International Europe and Australia, Far East Equity Index (MSCI EAFE).

Investment Advisors
As of June 30, 2004, MOSERS had contracts with three external investment advisors for the management of three separate international developed equity portfolios. Two of these advisors are managing active portfolios and are expected to add incremental returns over the MSCI EAFE Index through stock selection, country selection, and small amounts of currency hedging. The third manager runs an enhanced index portfolio that is expected to add small amounts of return over the MSCI EAFE Index while matching country weights within the index.

Statistics

Characteristics	International Developed Equity Portfolio	MSCI EAFE Index
Number of securities	1002	1066
Average market capitalization	$18.0 B	$43.8 B
Portfolio yield	2.3	2.4
Portfolio P/E	23.1	16.2
Portfolio beta vs. MSCI EAFE	0.9	1.0
Price/Book ratio	1.5	2.3

Schedule of Investment Advisors

Investment Advisor	Style	Portfolio Market Value
Mastholm Asset Management, LLC	Active growth	$402,865,504
Merrill Lynch Asset Management Group	Enhanced EAFE	86,015,313
NISA Investment Advisors, LLC	Int'l futures - rebalancing program	0
Silchester International Investors	Active value	446,882,821
Total		$935,763,638

Soft Dollar Expenditures

Types of Services Acquired	Commissions Used	Percentage of Total
Pricing Services	$ 14,760	12.4%
Research Services	104,540	87.6
Total	$ 119,300	100.0%

The middle table above displays the firms that were under contract with MOSERS during FY04 for management of international developed equity portfolios. Information on management fees paid may be found on page 71 of this report.

Brokerage Activity
Brokerage activity within the international developed equity portfolio throughout the fiscal year may be found in the table on page 78.

Soft Dollar Expenditures
In the fiscal year ended June 30, 2004, MOSERS' international developed equity managers declared $119,300 of the commissions generated were utilized to acquire a variety of services and research information. These expenditures, referred to as soft dollars (expendable excess commissions), are permitted under current SEC guidelines, and represent 1.1% of MOSERS' agency commissions. The third table above illustrates these expenditures.

International Developed Equity Brokerage Activity

Brokerage Firm	Shares Traded	Dollar Volume of Trades	Commissions Dollar Amount	Commissions Basis Points
ABG Sundal Collier	3,230,600	$ 31,956,629	$ 63,913	20.0
ABN AMRO	592,119	12,675,680	24,358	19.2
BNP Paribas	1,947,400	43,179,129	86,172	20.0
BNP Securities	235,500	2,236,376	3,945	17.6
Cantor Fitzgerald	1,023,600	24,907,007	33,617	13.5
Chevereux	1,307,610	22,478,718	44,389	19.8
CI Nordic Securities	124,200	1,277,157	2,554	20.0
Credit Lyonnais	2,080,600	23,203,431	46,581	20.1
CS First Boston	14,037,421	121,927,169	237,963	19.5
Daiwa Securities	9,733	2,305,960	3,459	15.0
DB Alex Brown	105,100	1,236,596	1,855	15.0
Deutche Bank	2,812,475	36,493,971	75,845	20.8
Dresdner Kleinwort	158,800	1,813,715	3,627	20.0
Enskilda Securities	628,000	11,089,630	22,179	20.0
Exane	349,000	5,938,757	11,878	20.0
Goldman Sachs	2,036,334	23,116,579	37,656	16.3
JB Were	2,564,800	20,282,564	46,321	22.8
JP Morgan	2,637,516	50,610,542	94,546	18.7
Lehman Brothers	892,765	17,117,222	25,974	15.2
Mainfirst Bank	1,226,300	28,817,527	57,466	19.9
Merrill Lynch	18,265,002	161,636,734	293,762	18.2
Mizuho Securities	1,502,980	15,678,236	23,517	15.0
Morgan Stanley	10,544,225	133,853,372	216,225	16.2
Neonet Securities	1,973,500	25,559,621	15,336	6.0
Nesbitt Burns	129,600	4,610,094	4,850	10.5
Net Fondkommission	327,600	5,771,231	3,463	6.0
Nomura	5,084,386	48,544,895	73,243	15.1
Oppenheim	143,200	8,971,739	17,943	20.0
Sanford C. Bernstein	1,536,200	14,204,189	24,439	17.2
SC Bernstein	451,600	7,935,984	14,475	18.2
SG Securities	1,193,600	9,808,569	19,617	20.0
Societe Generale	2,690,600	34,085,691	60,958	17.9
Svenska Handelsbanke	331,700	3,483,766	6,968	20.0
TD Waterhouse	99,600	2,316,080	3,752	16.2
UBS Warburg	14,326,297	152,274,081	282,464	18.6
Total	96,599,963	$1,111,398,641	$1,985,310	
Zero commission trades (excluded from above)	789,357	$ 16,878,011		

EMERGING MARKET EQUITY

Market Value
As of June 30, 2004, the emerging market equity portfolio was $283 million, or 4.8% of the total fund.

Summary of Portfolio
The emerging market equity allocation allows for the participation in the growth of companies in emerging economies outside of the U.S. It is anticipated that this sub-asset class will perform well in periods of rising inflation, as these economies tend to be driven by commodity businesses. In addition, this asset class provides diversification to the total equity portfolio. As of June 30, 2004, MOSERS' allocation was 4.8% of the total fund, nearly double the policy allocation target of 2.5%. This sub-asset class is overweight due to MOSERS' belief that valuations are still attractive relative to the domestic market.

Equity Statistics
The table at top right displays the statistical characteristics of the emerging market equity portfolio as of June 30, 2004, with comparisons shown to the Morgan Stanley Capital International Emerging Markets Free Index (MSCI EMF).

Statistics

Characteristics	International Emerging Market Equity Portfolio	MSCI EMF
Number of securities	631	722
Average market capitalization	$7.2 B	$12.6 B
Portfolio yield	2.7%	2.6%
Portfoio P/E	10.8	9.8
Portfolio beta vs. MSCI EMF	0.8	1.0
Price/Book ratio	2.3	2.3

Schedule of Investment Advisors

Investment Advisor	Style	Portfolio Market Value
Blakeney Management	Active emerging markets	$ 56,499,644
GMO, LLC	Active emerging markets	87,844,676
Merrill Lynch Quantitative Advisors	Enhanced MSCI Emerging Markets Free Index	97,664,000
Oaktree Capital Management, LLC	Long/short	40,958,275
Total		$282,966,595

Investment Advisors
As of June 30, 2004, MOSERS had four emerging market equity managers. Throughout the fiscal year, two managers were hired in this sub-asset class for active mandates. These managers included Blakeney Management and Grantham, Mayo, Van Otterloo & Co. (GMO).

The second table above displays the firms under contract with MOSERS during FY04 for the management of emerging market equity portfolios. Information regarding management fees may be found on page 71 of this report.

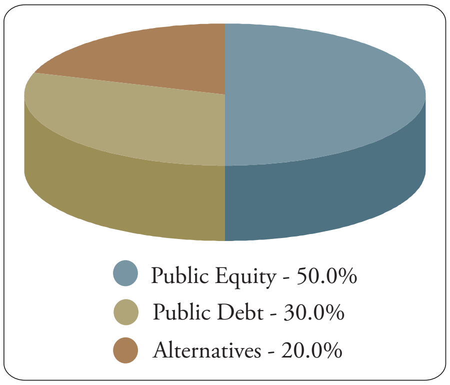
Brokerage Activity
The table at the bottom of this page summarizes brokerage activity which occurred within the emerging market equity portfolio throughout the fiscal year. Information in the table is strictly for the Merrill Lynch portfolio.

Soft Dollar Expenditures
There was no soft dollar activity within this sub-asset class within FY04.

Brokerage Activity

Brokerage Firm	Shares Traded	Dollar Volume of Trades	Commissions Dollar Amount	Commissions Basis Points
Banco Santander	1,088,748	$ 1,104,465	$ 2,319	21.0
Chase	790,850	543,521	544	10.0
Citibank	79,655	147,990	444	30.0
Citigroup Global Markets	22,000	8,179,966	1,227	1.5
Deutsche Bank	1,262	386,573	966	25.0
HSBC	2,362,992	11,763,596	44,138	37.5
Instinet	23,900	1,513,505	478	3.2
JP Morgan	142,116,857	86,052,814	201,854	23.5
Lasker Stone & Stern	26,904	856,708	807	9.4
MBI Correadores DE B	766,256	114,547	344	30.0
Morgan Stanley	5,847,259	12,679,239	21,237	16.8
UBS Warburg	14,505,893	17,723,381	33,889	19.1
Total	167,632,576	$ 141,066,305	$ 308,247	
Zero commission trades excluded from above	789,357	$16,878,011		

Public Debt Asset Class Summary



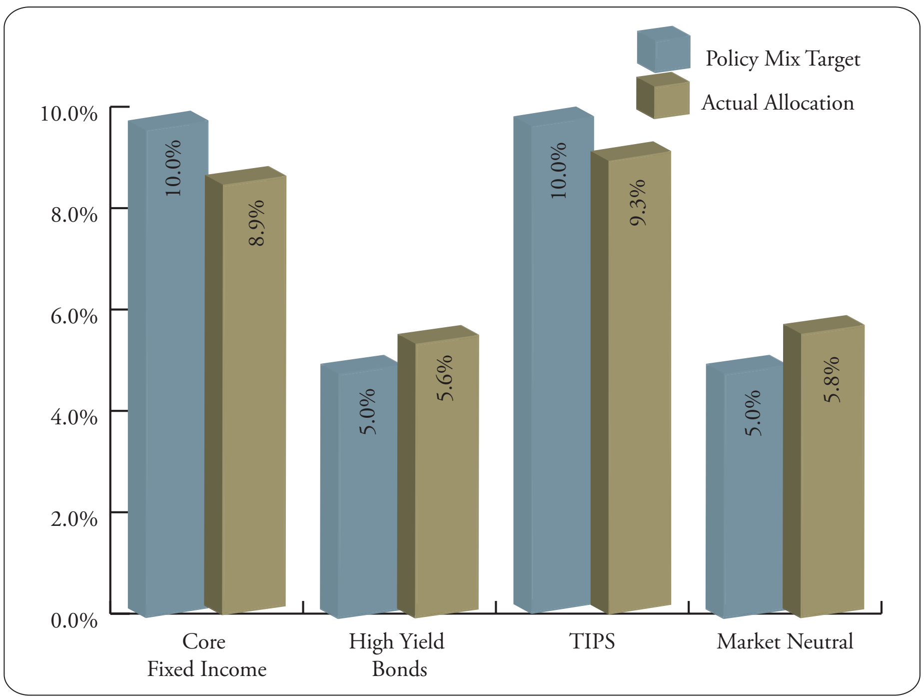
Highlights
As of June 30, 2004, the public debt allocation had a market value of $1.7 billion, representing 29.6% of the total fund. There was very little activity within this asset class in the fiscal year.

Portfolio Structure
The public debt portfolio has a target allocation of 30% of the total fund as illustrated in the pie chart above. This portfolio is comprised of four sub-asset classes which include core fixed income, high yield bonds, Treasury Inflation Protected Securities (TIPS), and market neutral. The bar chart to the right illustrates the actual sub-asset allocations relative to the board's policy allocation for each of these sub-asset classes. This reflects the CIO's strategic decisions to overweight or underweight sub-asset classes as of June 30, 2004. These decisions are confined to pre-established ranges set by the board to provide risk controls within the portfolio. The table at the bottom of this page summarizes the sub-allocation ranges established by the board.

Market Overview
The bond market over the course of the fiscal year was characterized by a stable fed funds rate policy. The target for fed funds remained at 1% throughout the fiscal year except for an increase to 1.25% at the very end of June 2004. The Federal Reserve has long taken a very gradualistic approach to monetary policy, so it was no surprise that they would keep short rates stable until very clear and confirming signals emerged as to the economic recovery. Long-term rates, on the other hand, were fairly volatile, reflecting a great deal of investor uncertainty as to the length and magnitude of the economic recovery and subsequent inflationary prospects. Long rates started the fiscal year at approximately 4.7%, then proceeded to rise as high as 5.4% before returning to the 4.7% level only to rise once again up through 5.5% and finally ending the year at about 5.2%.

In such a difficult interest rate environment, the only safe haven in bonds for the fiscal year was in

Public Debt Policy vs. Actual Allocation (As a Percentage of the Total Fund)



Public Debt Strategic Sub-Asset Allocation Ranges (As a Percentage of the Total Fund)

Sub-Asset Class	Minimum	Maximum	Policy Target
Core Fixed Income	5.0%	15.0%	10.0%
High Yield Bonds	0.0	10.0	5.0
TIPS	5.0	15.0	10.0
Market Neutral	0.0	10.0	5.0

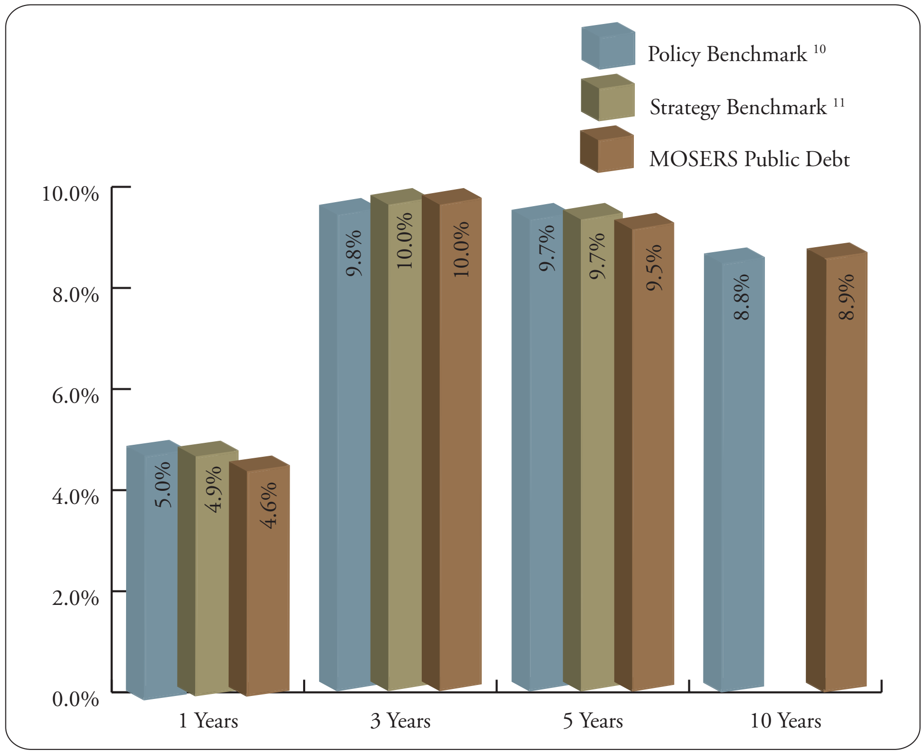
taking credit risk, the more the better. Corporate America experienced double digit profitability growth. Coupled with that was much more fiscal discipline on the part of corporate treasurers to improve balance sheets by retiring debt or just simply allowing cash balances to grow as opposed to embarking on massive capital spending programs. Default levels declined rapidly and there was a clear turn in the trend of ratings agencies' downgrades that were experienced in 2002 and the first half of 2003.

In summary, the safety of treasury securities was clearly not the place to be for FY04 from an absolute return perspective; however, on a relative basis, investors were rewarded significantly in asset-backed securities and investment grade corporates (100 to 170 basis points of excess return) and especially so in high yield where the excess return was more than 1,100 basis points.

Performance

The public debt portfolio returned 4.6% for the fiscal year, falling short of the policy benchmark return of 5% and the strategy benchmark return of 4.9%. During the fiscal year, strategy underweights and overweights were not substantial, so the major cause of underperformance was in the implementation of the strategies. The most significant amount of underperformance relative to the benchmark was experienced in the core fixed income sub-asset class. This was the result of the intentional decision to underweight credit exposure given the mild overweight to credit risk in the high yield sub-asset class where it was viewed that the risk/return profile was better than for investment grade corporates. Longer-term portfolio returns compare well to the policy and strategy benchmarks. The bar chart above illustrates performance over longer periods of time.

Public Debt Return vs. Benchmarks



Public Debt Allocation - Top Ten Holdings

Ten Largest Holdings as of June 30, 2004	Market Value	Percent of Total MOSERS Public Debt Portfolio
U.S. Treasury Inflation Index NT - 2.000%, '14	$329,059,052	18.9%
U.S. Treasury Inflation Index NT - 3.000%, '12	98,121,850	5.6
U.S. Treasury Inflation Index NT - 4.250%, '10	73,796,115	4.2
U.S. Treasury NT - 3.125%, '08	43,533,547	2.5
U.S. Treasury Inflation Index BD - 3.875%, '29	40,997,591	2.4
U.S. Treasury Notes - 05.000%, '11	30,547,099	1.8
U.S. Treasury Notes - 1.625%, '05	26,899,338	1.5
U.S. Treasury Notes - 4.250%, '13	22,186,602	1.3
U.S. Treasury Bonds - 08.125%, '19	21,680,429	1.2
U.S. Treasury Bonds - 05.375%, '31	19,669,623	1.1

Top 10 Holdings

The top 10 holdings within the public debt portfolio as of June 30, 2004, are illustrated in the table above. A complete list of holdings within the public debt portfolio is available upon request.

10 As of 6/30/04, the public debt policy benchmark was comprised of the following components: 33.3% Lehman Aggregate, 33.3% Lehman U.S. TIPS, 16.7% Lehman High Yield, 16.7% T-Bills + 4%.

11 As of 6/30/04, the public debt strategy benchmark was comprised of the following components: 29.9% core bond strategy (includes Lehman MBS/ABS 67%/33% hybrid, Lehman U.S. Government Credit), 31.4% Lehman U.S. TIPS, 19% Lehman High Yield, 19.7% T-Bills + 4%.

CORE FIXED INCOME

Market Value
The core fixed income allocation was $521.9 million as of June 30, 2004, or 8.9% of the total fund, just slightly below its policy target of 10%.

Summary of Portfolio
The core fixed income sub-asset class gives the total fund exposure to high quality fixed income instruments which, in turn, provides stable cash flows and excellent liquidity to the portfolio. Types of fixed income securities held within this portfolio may include U.S. Treasuries, mortgage-backed securities, asset-backed securities, agency securities, and investment grade corporate bonds. While historically fixed income has not outperformed equities, the asset class does provide diversification to the portfolio in a variety of different economic scenarios. Core fixed income performs well particularly in periods of good economic growth and falling inflation. In addition, because of the generally high quality nature of the core segment, one can also expect adequate performance from the core portfolio in periods of modestly falling growth and stable inflation.

Statistics
The table at top right displays the statistical characteristics of the core fixed income portfolio as of June 30, 2004, with comparisons shown to the Lehman Aggregate Bond Index.

Investment Advisors
As of June 30, 2004, MOSERS had contracts with two external investment advisors for the management of three separate fixed income portfolios – one for mortgage-backed/asset-backed securities, one for government/corporate securities, and one a passively managed futures program utilized as a part of the total fund's rebalancing program.

The middle table above displays the investment advisors that were under contract with MOSERS during FY04 for management of core fixed income portfolios. Information regarding management fees paid to these managers may be found on page 71 of this report.

Brokerage Activity
The third table above shows MOSERS' core fixed income brokerage activity ranked by percentage of total, through the purchase and sale of core fixed income assets in FY04.

Statistics

Characteristics	Core Fixed Income Portfolio	Lehman Aggregate Bond Index
Total number of securities	326	5,700
Current yield	4.5%	5.2%
Yield to maturity	4.1%	4.7%
Average life/maturity	11.1	7.5
Adjusted duration	4.2	4.8
Quality	AAA	AA1

Schedule of Investment Advisors

Investment Advisor	Style	Portfolio Market Value
BlackRock Financial Management, Inc.	Enhanced mortgage-backed and asset-backed securities index	$174,451,598
NISA Investment Advisors, LLC	Enhanced gov't/corp index	269,450,160
NISA Investment Advisors, LLC	Fixed income futures - rebalancing account	77,960,376
Total		$521,862,134

Brokerage Activity

Broker/Dealer Firms	Par Amount Traded	Market Value Traded	Percent of Total Trading Volume by Market Value
Goldman Sachs	$1,254,381,392	$1,278,633,104	23.4%
Morgan Stanley	1,059,364,979	1,064,853,250	19.5
Credit Suisse First Boston	708,389,514	722,184,498	13.2
Lehman Brothers	572,785,929	577,396,335	10.6
Citigroup	482,860,305	491,844,835	9.0
Banc of America	239,356,181	238,949,034	4.4
Chase Securities	201,147,518	203,764,669	3.7
Merrill Lynch	197,170,247	199,214,847	3.6
Deutsche Bank	190,835,249	194,865,978	3.5
UBS Securities	184,833,147	184,737,964	3.4
Bear Stearns	157,273,423	161,962,455	3.0
Barclays	65,020,000	65,841,583	1.2
Greenwich Capital Markets	57,320,000	59,458,382	1.1
Other (8 brokers each < 1%)	22,764,905	22,222,666	0.4
Total	$5,393,502,789	$5,465,929,600	100.0%

HIGH YIELD BONDS

Market Value
The high yield bond allocation was $331.3 million as of June 30, 2004, or 5.6% of the total fund.

Summary of Portfolio
The high yield bond portfolio invests in debt securities whose credit ratings are below investment grade quality. Relative to the core fixed income portfolio, this sub-asset class provides superior coupon cash flow, as well as some diversification benefit due to a reduced sensitivity to changes in interest rates. MOSERS views this allocation as one that is likely to be changeable and very much dependent upon the particular stage of the economic cycle being experienced at the time of the allocation decision. As of June 30, 2004, MOSERS was slightly over the 5% policy target allocation to high yield bonds.

Statistics
The table at top right displays the statistical characteristics of the high yield bond portfolio as of June 30, 2004, with comparisons shown to the Lehman High Yield Bond Index.

Investment Advisors
As of June 30, 2004, MOSERS had a contract with one external investment advisor for the management of a high yield bond portfolio. Information related to this manager is included in the middle table to the right. For information on management fees paid, refer to the table on page 71 of this report.

Statistics

Characteristics	High Yield Bond Portfolio	Lehman High Yield Bond Index
Total number of securities	241	1,652
Current yield	8.4%	8.4%
Yield to maturity	8.2%	8.3%
Average life/maturity	7.7	8.1
Adjusted duration	4.6	4.8
Quality	B2	B1/B2

Schedule of Investment Advisors

Investment Advisor	Style	Portfolio Market Value
BlackRock Financial Management, Inc.	Active high yield bond	$331,326,126

Brokerage Activity

Broker/Dealer Firms	Par Amount Traded	Market Value Traded	Percent of Total Trading Volume by Market Value
Credit Suisse First Boston	$139,399,447	$139,232,783	16.2%
Citigroup	122,995,750	122,581,784	14.3
Chase Securities	120,194,770	118,875,729	13.9
Goldman Sachs	106,515,950	103,324,499	12.1
Bear Stearns	67,415,100	68,145,240	7.9
Banc of America	54,641,500	54,075,747	6.3
Lehman Brothers	52,338,500	52,286,124	6.1
Deutsche Bank	32,916,000	33,269,078	3.9
UBS Securities	31,216,100	32,083,854	3.7
Morgan Stanley	30,420,000	30,692,058	3.6
Merrill Lynch	27,465,000	27,255,111	3.2
Wachovia Capital	16,170,000	16,605,331	1.9
SG Americas Securities	10,685,000	10,378,131	1.2
Pershing LLC	9,515,000	9,569,956	1.1
Oppenheimer	8,825,000	8,670,991	1.0
Other (16 brokers each < 1%)	29,827,315	30,728,463	3.6
Total	$860,540,432	$857,774,879	100.0%

Brokerage Activity
The third table above captures high yield bond brokerage activity ranked by percentage of total, through the purchase and sale of high yield assets in FY04.

TREASURY INFLATION PROTECTED SECURITIES (TIPS)

Market Value
The TIPS allocation was $547.9 million, or 9.3% as of June 30, 2004.

Summary of Portfolio
TIPS are fixed income securities issued and guaranteed by the U.S. government. The yield on these securities is specifically tied to inflation, as measured by the U.S. consumer price index, plus a predetermined yield above and beyond inflation. The TIPS allocation provides an excellent match relative to the liabilities in terms of its ability to provide inflation protection. As of June 30, 2004, MOSERS was slightly under the 10% policy target allocation to TIPS.

Statistics
The table at top right displays the statistical characteristics of the TIPS portfolio as of June 30, 2004, with comparisons shown to the Lehman U.S. TIPS Index.

Investment Advisors
As of June 30, 2004, the TIPS portfolio was 100% internally managed. The middle table to the right summarizes the details.

Brokerage Activity
The third table to the right captures MOSERS' brokerage activity ranked by percentage of total, through the purchase and sale of TIPS for FY04.

Statistics

Characteristics	TIPS Portfolio	Lehman U.S. TIPS Index
Total number of securities	4	12
Current yield	2.1%	2.6%
Yield to maturity	5.2%	4.9%
Average life/maturity	9.9	11.0
Adjusted duration	5.3	5.4
Quality	Treasury	Treasury

Schedule of Investment Advisors

Investment Advisor	Style	Portfolio Market Value
Internal Staff	Passive inflation-indexed bonds	$547,863,361

Brokerage Activity

Broker/Dealer Firms	Par Amount Traded	Market Value Traded	Percent of Total Trading Volume by Market Value
Barclays Capital	$594,105,000	$ 736,156,594	70.6%
Deutsche Bank	121,075,000	160,144,780	15.4
Merrill Lynch	124,650,000	145,966,014	14.0
Total	$839,830,000	$1,042,267,388	100.0%

MARKET NEUTRAL

Market Value
The market neutral allocation was $343.5 million, or 5.8% of the total fund as of June 30, 2004.

Summary of Portfolio
The market neutral portfolio consists of a variety of managers who utilize skill-based investment strategies, which allow them to take advantage of periodic inefficiencies that may exist within the market. The expectation for this sub-asset class is to produce consistent absolute returns in various economic environments. More directly, MOSERS expects this portfolio to generate returns of 4% in excess of returns on 90-day Treasury bills with volatility similar to what is expected from the core fixed income portfolio. Market neutral investments also provide diversification and downside protection to the portfolio. MOSERS utilizes a fund-of-funds approach to gain exposure to this sub-asset class. This allows MOSERS to invest in a pool comprised of a variety of different types of strategies which provides additional risk protection. As of June 30, 2004, MOSERS was slightly over the 5% policy target allocation to market neutral.

Statistics

Characteristics	For the Life of the Fund
Number of managers within the fund	36
Annualized return (net)	6.6%
Annualized standard deviation	2.1%
Sharpe ratio	2.7
Beta (relative to the Lehman Aggregate Bond Index)	0.2
Alpha (annualized)	1.5%
Index correlation - Lehman Aggregate Bond Index	0.6

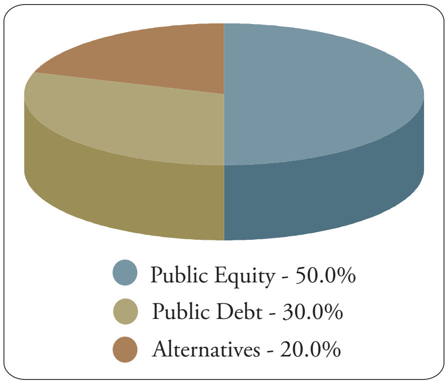
Schedule of Investment Advisors

Investment Advisor	Style	Portfolio Market Value
Blackstone Alternative Asset Management, LP	Market neutral	$343,484,497

Statistics
The top table above displays the statistical characteristics of the market neutral portfolio as of June 30, 2004.

Investment Advisors
Blackstone Alternative Asset Management serves as a strategic partner to make investments within the market neutral sub-asset class and provides ongoing consulting and education to staff. The second table above summarizes MOSERS' investment with Blackstone in this category as of June 30, 2004. Information on manager fees paid can be found on page 71 of this report.

Alternative Investments Asset Class Summary



Highlights

As of June 30, 2004, the alternative investments portfolio had a market value of $1.5 billion, representing 19.5% of the total fund. Performance for the fiscal year was 11.4% net of fees and expenses.

Several changes were made to the alternative investments portfolio throughout the year. Here are a few of the highlights:

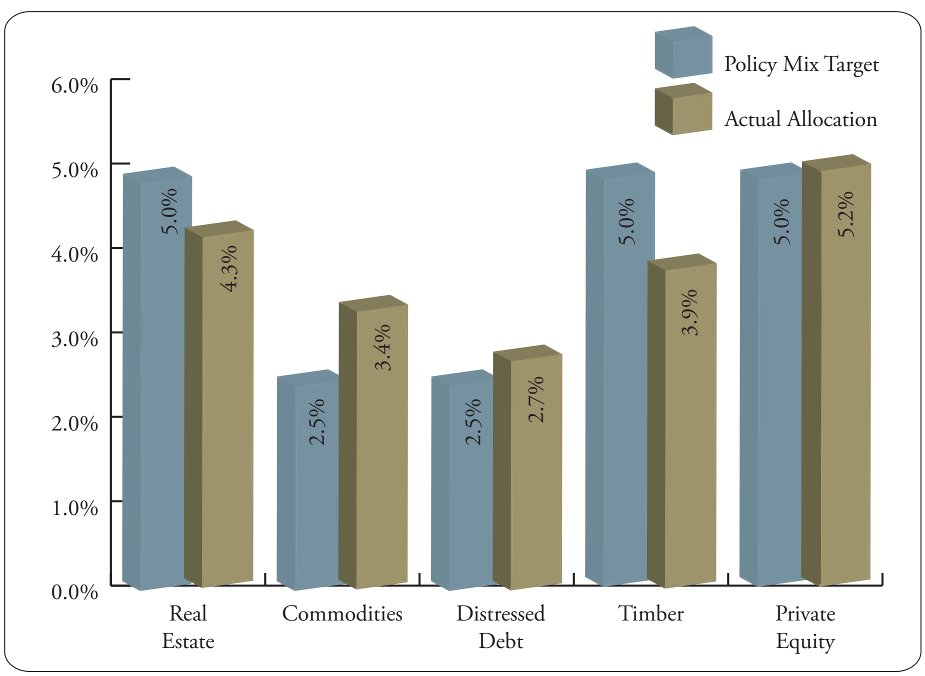
- The private equity allocation was increased from 3% to 5% in April 2004 to reach the policy allocation target. A large portion of these assets reside in temporary accounts. They will be called by private equity managers when investment opportunities arise. Funding came from international developed equity. During FY04, MOSERS made its first commitment to two private equity managers totaling $60 million.
- MOSERS made its first allocation to timber by hiring two managers with a total commitment of $220 million. Up to $120 million has been committed to The Campbell Group to manage a Northwestern U.S. portfolio and $100 million has been committed to Resource Management Service, Inc. (RMS) to manage a Southeastern U.S. portfolio.

Portfolio Structure

The alternative investments portfolio is 20% of the total fund as illustrated in the pie chart to the left. Within this broad allocation are five distinct strategies (herein also referred to as "sub-asset classes") which include real estate, commodities, distressed debt, timber, and private equity. Over the past year, new investments were made in real estate and private equity. In addition, although two managers were hired within the timber sub-asset class, no timberland purchases have been made as of June 30, 2004. Within the real estate, timber, and private equity sub-asset classes, funds have been invested in liquid alternatives. They will be invested in their respective sub-asset classes only when the fund managers draw down capital to fund opportunities. It is anticipated that achieving full investment in these categories will take several years due to the nature of these sub-asset classes.

The bar chart below illustrates the board's policy allocation to the sub-asset class mix as of June 30, 2004. Strategic decisions to overweight or underweight

Alternative Investments Policy vs. Actual Allocation (As a Percentage of the Total Fund)



allocations relative to the policy mix are reflected in this chart. The table to the right summarizes the sub-asset class allocation ranges established by the board.

Alternative Investments Strategic Sub-Asset Allocation Ranges (As a Percentage of the Total Fund)

Sub-Asset Class	Minimum	Maximum	Policy Target
Real Estate	2.5%	7.5%	5.0%
Commodities	0.0	5.0	2.5
Distressed Debt	0.0	5.0	2.5
Timber	2.5	7.5	5.0
Private Equity	2.5	7.5	5.0

Market Overview

The alternative investments allocation was added to the portfolio mix by the board in June of 2002. Alternative investments are expected to provide various benefits to the overall fund depending on the type of alternative. Some of these benefits include enhanced returns, diversification, inflation hedging, and deflation hedging. For example, the real assets in the program are expected to provide a hedge against inflation and diversify the entire portfolio. In addition, many of the sub-asset classes such as private equity and distressed debt are expected to produce returns greater than those produced by the public equity and public debt markets. Timber and core real estate investments are expected to produce less volatile return streams than traditional assets, therefore lowering the risk of the total fund.

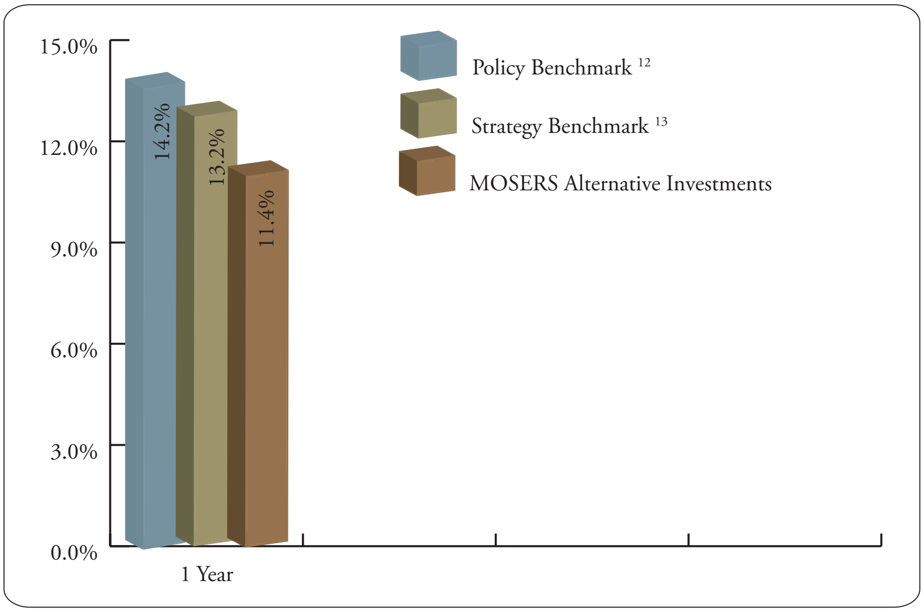
Despite the fact that the program is not fully implemented, returns produced by the existing alternative investments portfolio in FY04 were incredibly strong. A majority of the returns can be attributed to strong commodities markets and the surprising strength of the real estate market. Commodities outperformed many asset classes in FY04. Concerns related to the availability of future oil supplies and the demand for non-energy commodities led to significant returns in this sub-asset class. A few large economies, including the U.S. and China, remain a significant source of demand for many commodities. MOSERS currently has a slight overweight to commodities. Over the long-term, the commodities portfolio has exhibited a negative correlation to the equity markets and is expected to provide a hedge against unexpected spikes in inflation.

Another large contributor to the alternative investments return was the real estate portfolio. The REIT portion of the portfolio performed similarly to other public equity markets and continued to produce a dividend yield in excess of 5%. The real estate allocation has become further diversified over the past 12 months with the addition of a mezzanine loan portfolio and another opportunistic real estate fund. While the loan portfolio should generate income for MOSERS, the opportunistic real estate funds are expected to provide outstanding returns by capitalizing on global prospects in all real estate markets.

After an exceptional period of returns for distressed debt in FY03, the returns in this sub-asset class have reverted back to normal levels. As the equity markets performed well in this period of economic recovery, default rates subsided and the distressed debt markets grew cold. Similarly, the long maturity U.S. Treasury portfolio which has been held as a deflation hedge produced negative returns as fears of deflation subsided and inflation fears heated up.

Finally, the private equity and timber programs are very early in the implementation phase. Regional timber investment managers were hired throughout the fiscal year, and are expected to begin buying properties in FY05. There is a large supply of timberland coming to the market, so MOSERS believes that the first property will be purchased in the near future. Private equity commitments to buyout firms were initiated in FY04 and will continue to be made throughout the life of the program. MOSERS continues to believe that the venture capital market fundamentals are not enticing to new investors, and therefore MOSERS has not yet made commitments to these strategies.

Alternative Investments Return vs. Benchmarks



Performance

MOSERS' alternative investments portfolio returned 11.4% for the fiscal year, falling shy of the 14.2% return for the policy benchmark and 13.2% return for the strategy benchmark as illustrated in the above bar chart.

The underperformance is explained by the real estate sub-asset class and the distressed debt sub-asset class. In the real estate sub-asset class, the decision made by the CIO to sell a portion of the REIT portfolio with proceeds used to fund opportunistic real estate managers hurt the performance as REITs continued their strong performance throughout the fiscal year. Additionally, the distressed debt portfolio underperformed its benchmark largely as a result of the private equity-like structure of these investments. Returns are generally lower in the initial years of long-term limited partnerships as managers invest the funds over a period of several years. These partnerships typically realize gains later in the life of the fund after improvements to the portfolio companies have occurred and realizations have been made. This "J-Curve" pattern of returns is well-known in the private markets arena. Due to this phenomenon, performance compared to a market benchmark over short periods, especially early in the life of these funds, provides little useful information.

12 As of 6/30/04, the alternative investments policy benchmark was comprised of the following components: 25% Wilshire REIT, 25% actual return of the timber component, 25% actual return of the private equity component, 12.5% Lehman Brothers CCC + 2%, 12.5% GSCI (Goldman Sachs Commodity Index).

13 As of 6/30/04, the alternative investments strategy benchmark was comprised of the following components: 22.2% real estate strategy (composed of the Wilshire REIT, NCREIF - National Council of Real Estate Investment Fiduciaries, T-Bills) 20.3% actual return of the timber component, 26.4% actual return of the private equity component, 13.5% Lehman Brothers CCC + 2%, 17.6% GSCI.

REAL ESTATE

Market Value
The real estate allocation was $254.1 million, or 4.3% of the total fund as of June 30, 2004.

Summary of Portfolio
Investments in the real estate allocation may take the form of publicly-traded real estate investment trusts (REITs), equity real estate through closed-end funds, and other investments that exhibit the beneficial risk/return characteristics of real estate. Investments in real estate provide a hedge against inflation. Opportunistic real estate funds should provide returns in excess of those expected from the public equity markets due to the illiquidity of their investments and the inefficiencies in this market. Manager skill is expected to add value to the performance of these private partnerships. As of fiscal year-end, MOSERS had invested in REITs, closed-end opportunistic real estate funds, and a closed-end mezzanine loan fund. A temporary holding account was established in order to invest the assets needed for funding the opportunistic real estate portfolio investments when capital is called for investment. This placeholder account is expected to produce absolute enhanced cash returns from specialized relative value strategies employed by the manager.

Statistics

Characteristics	REIT Portfolio	Wilshire REIT Index
Number of securities	50	50
Average market capitalization	$4.9 B	$4.3B
Portfolio yield	5.3%	5.4%
Portfoio P/E	28.0	31.9
Portfolio Beta vs. Wilshire REIT Index	1.0	1.0
Price/Book ratio	3.9	1.7

Schedule of Investment Advisors

Investment Advisor	Style	Portfolio Market Value
Blackstone Bridge Advisors, LP	Absolute return	$ 50,626,600
Blackstone Real Estate Advisors	Active real estate	16,728,977
Internal Staff	Passive REIT index	157,540,894
Oaktree Capital Management, LLC	Active real estate	21,667,683
Trust Company of the West	Mezzanine debt	7,535,793
Total		$254,099,947

Statistics
The top table displays the statistical characteristics of the REIT portfolio as of June 30, 2004, with comparisons shown to the Wilshire REIT Index.

Investment Advisors
During FY04, MOSERS committed assets to two new external investment advisors: TCW - a mezzanine loan fund focused on the oil and gas sector; and Blackstone Real Estate Advisors- an opportunistic real estate fund. The Blackstone Bridge Advisors fund is an absolute return strategy which serves as a placeholder for assets being deployed into the Blackstone Real Estate Advisors fund. The second table above summarizes MOSERS' real estate investment advisors throughout FY04.

Brokerage Activity
Brokerage activity within the internally-managed REIT portfolio throughout the fiscal year is illustrated in the table at the bottom of this page.

Soft Dollar Expenditures
There were no soft dollars utilized within the REIT portfolio for the fiscal year ended June 30, 2004.

Brokerage Activity

Brokerage Firm	Shares Traded	Dollar Volume of Trades	Commissions	
			Dollar Amount	Value Per Share
Instinet	2,034,160	$58,613,745	$61,025	$0.03

COMMODITIES

Market Value
The commodities allocation was $201.6 million as of June 30, 2004, representing 3.4% of the total fund.

Summary of Portfolio
MOSERS gains exposure to commodities through NISA Investment Advisors. The benchmark for this sub-asset class is the Goldman Sachs Commodities Index (GSCI). The commodities portfolio has provided exceptional diversification benefits to MOSERS and continues to provide a hedge against unexpected inflation. Although volatile at times, the low/negative correlation of commodities to traditional asset classes provides protection to the total fund when financial assets experience periods of poor performance.

Statistics
The table at top right displays the sector weightings of the commodities portfolio as of June 30, 2004.

Investment Advisors
MOSERS has had one manager in the commodities allocation since its inception in 1998. Information on this manager can be found in the second table to the right.

Statistics

Sector	Weighting	Largest Component
Energy	68.6%	Crude oil (25.5%)
Agricultural	14.7	Corn (3.9)
Industrial metals	7.4	Aluminum (3.2)
Precious metals	2.2	Gold (2.0)
Livestock	7.1	Live cattle (3.8)

Schedule of Investment Advisors

Investment Advisor	Style	Portfolio Market Value
NISA Investment Advisors, LLC	Enhanced GSCI	$201,566,972

DISTRESSED DEBT

Market Value

The distressed debt allocation was $154.9 million, or 2.7% of the total fund as of June 30, 2004.

Summary of Portfolio

Distressed debt investments are expected to provide capital appreciation as funds are used to purchase debt securities to gain a controlling interest in a company at a significant discount to fair value. The inefficiency of the distressed debt market, lack of participation in this sector, and the return premium expected due to the illiquid nature of this strategy, are all factors that lead to the possibility of enhanced returns versus traditional assets. Participation as a limited partner in closed-end funds has been the method of implementation for this strategy. The fund managers typically buy undervalued debt securities and then pursue active strategies to change the credit profile of the company in an attempt to realize a gain on the investment. Over a full market cycle, returns in excess of public debt, and in particular, high yield debt, are expected from distressed debt investments.

Statistics

Sector	Weighting
Transportation	15.9%
Manufacturing	14.3
Telecommunications	12.5
Media/Cable/Broadcasting	12.4
Consumer Products	10.1

Schedule of Investment Advisors

Investment Advisor	Style	Portfolio Market Value
DDJ Capital Management, LLC	Small-cap; control	$ 31,011,978
MHR Fund Management, LLC	Small-cap; control	24,509,747
Oaktree Capital Management, LLC	Large/mid-cap; trading/control	36,199,637
Wayzata Investment Partners, LLC	Mid/small-cap; trading/control	63,213,156
Total		$154,934,518

Since reported in last year's annual report, the portfolio's exposure to distressed debt securities has been reduced from a significant overweight of 4.6% to a weight of 2.6%. As a result, the allocation has returned to an almost neutral policy weight of 2.5%. Throughout FY03, MOSERS profited handsomely from this tactical overweight due to the poor economic conditions during that period. However, MOSERS' current belief is that with the economy showing signs of improvement, the best opportunities in the distressed debt arena are behind us, at least for this cycle.

Statistics

The top table displays the industry weights of the distressed debt portfolio as of June 30, 2004.

Investment Advisors

During FY04, MOSERS was invested with four external distressed debt managers through closed-end limited partnerships. As of June 30, 2004, $207 million of the $250 million committed to these managers has been called and invested. Additionally, MOSERS has received approximately $144.2 million in distributions. MOSERS' managers in this space are shown in the second table above.

TIMBER

Market Value

The market value of assets currently being held in the timber allocation is $232 million, or 3.9% of the total fund. It should be noted that MOSERS has committed assets to two timber managers. To date, the managers have not purchased properties for MOSERS' accounts. Instead, the funds in the timber allocation are currently invested in U.S. Treasury securities. These assets will be drawn down for timber investments when the managers identify investment opportunities.

Summary of Portfolio

Although there are currently no properties held in the timber portfolio, the dollars committed to timber investments are being held in two U.S. Treasury portfolios. The choice to hold these assets in long-dated Treasuries is a conscious decision to provide the fund some protection against the risk of deflation, which was a meaningful concern throughout most of FY04. The timber portfolio will be built over time through a diversified approach. MOSERS has committed assets to two timber investment management companies to purchase and manage timber in the Northwest and Southeast U.S. A third manager will be given a mandate to purchase timberlands in the southern hemisphere on MOSERS' behalf. The timber allocation will possess geographical, age, tree species, and timber market diversification. These factors have been carefully considered to mitigate risks within the timber portfolio. It is anticipated it will take two to three years to fully invest the funds committed to this sub-asset class. Timber returns over a full market cycle are expected to be similar to those generated by the public equity markets, but should exhibit volatility similar to public debt securities. An allocation to timber also provides a hedge against inflation, additional cash flows, and diversification to the fund when financial assets are experiencing poor performance.

Schedule of Investment Advisors

Investment Advisor	Style	Portfolio Market Value
Hoisington Investment Management Co.	Active duration treasury securities	$ 99,870,017
Internal Staff	Active duration treasury securities	132,130,006
Resource Management Service	Southeast U.S. timberland	0
The Campbell Group	Northwest U.S. timberland	0
Total		$232,000,023

Investment Advisors

MOSERS committed assets to two investment managers during FY04 to purchase and manage timberland properties on the system's behalf. The managers are listed in the table above. However, no timberland investments have been made to date due to the relatively slow process of identifying, evaluating, and purchasing attractive timberland properties. While MOSERS waits for attractive timber opportunities, the funds that have been earmarked for deployment into timber are invested in two U.S. Treasury securities portfolios.

PRIVATE EQUITY

Market Value
The market value of assets currently being held in the private equity allocation is $303.3 million, or 5.2% of the total fund. In FY04, MOSERS made commitments to four private equity managers. However, roughly 70% of the funds in this allocation are still being held in accounts which serve as temporary placeholders until the assets are ready to be committed and deployed. The private equity portfolio is expected to be invested primarily over the next three years, with ongoing investments to be made in order to maintain the target allocation.

Private equity investments may be allocated to three primary strategies: corporate buyouts, venture capital, and special situations/activist equity strategies. Each of these strategies has a different level of risk and expected return. Diversification and enhanced returns are the key benefits of the private equity portfolio. MOSERS anticipates less capital will be committed to venture capital, as it is viewed to have a less attractive risk/return profile than corporate buyouts and special situations/activist equity. The private equity portfolio is expected to produce returns of 3% to 5% in excess of the public equity markets over a full market cycle.

Schedule of Investment Advisors

Investment Advisor	Style	Portfolio Market Value
Blackstone Alternative Asset Management, LP	Long/short	$110,583,301
Blum Capital Partners, LP	Activist Equity	30,654,401
Catterton Partners Management Co, LLC	Corp. buyout	1,740,296
Merrill Lynch Asset Management Group	Enhanced EAFE	85,063,518
NISA Investment Advisors, LLC	Equity futures	18,271,762
Relational Investors, LLC	Activist equity	56,968,506
Totals		$303,281,784

Investment Advisors
While 30% of the assets in this sub-asset class have been committed, the remaining 70% resides within temporary placeholder accounts for future private equity investments. The Blackstone long/short fund, Merrill Lynch Enhanced EAFE fund, and NISA equity futures account all serve as temporary placeholders. Information regarding managers in this class is summarized in the table above.

Securities Lending Summary

Summary of Program
In FY04 MOSERS earned net income of $4,036,654 through its securities lending programs. This incremental income contributed 6.8 basis points to MOSERS' total fund and 12.4 basis points to MOSERS' lendable assets. MOSERS lends its domestic equities, international equities, and domestic fixed income to borrowers that manage either an agent lending program or a principal lending program. MOSERS' fixed income and international equities are lent through an agent program while the domestic equities are lent through a principal program. Definitions of these two programs follow.

- *Agent Lending Program*
  In this type of program, a large custodial bank or investment banking institution acts on behalf of the beneficial owner to lend its securities. This type of lending program is essentially a "one-stop" shopping process in which all operational aspects of the program are centered exclusively with one entity. The agent lender is responsible for making the loans to various broker-dealers, investing the cash collateral associated with the loaned securities, marking the loans and collateral to market on a daily basis, and in most cases, indemnifying the lender against the default of a broker-dealer to whom they have loaned securities on behalf of the beneficial owner.

- *Principal Lending Program*
  This type of program differs from an agent lending program in that loans are being made directly to the end user of the securities on an exclusive basis. The elimination of the agent (middle man), carries with it the opportunity for increased revenue, however; this does not come risk free. The primary risk in a principal lending program that an agent program generally avoids is the risk of concentrating a large block of loans with one counterparty and that entity being unable to return the loaned securities due to a coincidental financial hardship or bankruptcy. The implications of counterparty risk and how MOSERS manages it is discussed in the footnotes of the Financial Section of this report starting on page 38.

Domestic Equity
MOSERS generated total income from the domestic equity principal lending program of $1,114,144 in FY04. Revenue from this program was $390,008 less than FY03 stemming from a decrease in utilization of lendable assets, decreased collateral reinvestment income, and a change in contract terms regarding the principal guarantee. Lehman Brothers is the exclusive borrower of MOSERS' securities for this program.

The top table on page 95 highlights statistics for the last three fiscal years relating to the domestic equity securities lending program.

International Equity
MOSERS generated total income from the international equity securities lending program of $446,880 in FY04. A $298,105 revenue decrease from FY03 is credited to the movement of a piece of the international equity lendable base into a commingled fund. Credit Suisse First Boston (CSFB) manages this program in an agent capacity.

The middle table on page 95 contains the international equity securities lending program statistics from FY02 through FY04.

Domestic Fixed Income
MOSERS generated total income from the domestic fixed income securities lending program of $2,475,630 in FY04. Income from this program increased due to the addition of a treasury portfolio (attractive from a lending standpoint) to the lendable fixed income assets. CSFB manages this program in an agent capacity.

The bottom table on page 95 presents the statistics for the domestic fixed income securities lending program for FY02 through FY04.

Domestic Equities

	Average Lendable	Average on Loan	Average Utilization	Return Added to Lendable Domestic Equities (basis points)	Net Income
FY 2004	$1,552,186,713	$176,626,818	11.4%	7.2	$1,114,144
FY 2003	1,420,413,446	234,776,497	16.5	10.6	1,504,152
FY 2002	2,347,223,937	254,035,429	10.8	8.6	2,027,903

International Equity

	Average Lendable	Average on Loan	Average Utilization	Return Added to Lendable International Equities (basis points)	Net Income
FY 2004	$462,783,570	$53,655,836	11.6%	9.7	$446,880
FY 2003	544,976,709	36,820,686	6.8	13.7	744,985
FY 2002	728,081,371	70,020,289	9.6	15.5	1,130,928

Domestic Fixed Equity

	Average Lendable	Average on Loan	Average Utilization	Return Added to Lendable Domestic Fixed Income (basis points)	Net Income
FY 2004	$1,231,730,491	$1,043,891,521	84.7%	20.1	$2,475,630
FY 2003	969,156,825	757,537,477	78.2	17.6	1,707,400
FY 2002	899,565,271	720,912,307	80.1	19.5	1,750,764

An Epic Tale

The expedition struggled around the Great Falls of the Missouri, searched for a pass over the Continental Divide, and was stunned to not find a water passage direct from present day Idaho to the ocean. Instead, the party labored in deep snow over the Lolo Trail, crossing the border of present day Montana into Idaho, then traveled on the Snake River into present day Washington before finally reaching the Columbia River. By the time Lewis and Clark reached the Pacific Ocean in November 1805 and built Fort Clatsop, they had a much clearer sense of the continent's geographic complexity.

The return journey to St. Louis held its own unique dangers and accomplishments. With several important exploration tasks still planned, Clark led one party on a reconnaissance of the Yellowstone River, while Lewis took a small detachment into present day Montana. In August, the groups reunited on the Missouri River near the mouth of the Yellowstone and continued homeward bound towards St. Louis.